DEFENDED ENCLOSURES SURVEY: THREAT-RELATED ASSESSMENT OF CROPMARKS ON THE LLYN PENINSULA AND ANGLESEY 2007-8

Report No. 728

Prepared for Cadw
March 2007
By
D. Hopewell, G.H. Smith and Dr T. Driver

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Cover: Bwlch y Ffordd Isa cropmark © RCAHMW

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D. Hopewell G.H. Smith and Dr T. Driver

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DEFENDED ENCLOSURES SURVEY: THREAT-RELATED ASSESSMENT OF CROPMARKS ON THE LLYN PENINSULA AND ANGLESEY 2007-8 (G1944)

1. INTRODUCTION

A previous project successfully carried out geophysical survey and soil pit assessment of a number of defended enclosures on the Llŷn peninsula of a type described as 'weak double ringworks' by the RCAHMW (Smith and Hopewell 2007). This showed the potential for such work, identifying both internal details, evidence of phasing and information about vulnerability. It happened that in the summer of 2006 a long period of drought led to parching on vulnerable areas of soils on the Llŷn Peninsula. Aerial photographic work by Toby Driver of the RCAHMW then led to the identification of a considerable number of new crop mark sites. These included several new possible prehistoric defended enclosures and the project described here was designed to assess these on the ground.

Eight of the crop marks were curvilinear ditched enclosures that were likely to be prehistoric defended settlements and it was proposed that geophysical survey by magnetometer together with soil test-pitting should be carried out. This would provide information of value to both research and management. All the sites lie in areas of present or former arable and are therefore at risk from possible future ploughing.

The work was carried out in partnership with the RCAHMW who supplied the aerial photographs and plots. The work also comprised an element of public outreach in which trial excavation was carried out at one of the sites with arrangements made for guided visits and talks for local schools.

The eight new cropmark sites of possible prehistoric enclosures were quite widely scattered on Llŷn. Most were relatively small and univallate although at least two appeared to have concentric enclosure ditches. Two appeared to have 'antenna' entrances. Despite their small size most appeared to have substantial ditches and so could be regarded as defended enclosures although not hillforts as such. The curvilinear shape of all the enclosures suggested comparison with others known on Llŷn and the possibility that some may belong to the second millennium BC, rather than the first.

The sites selected were are at Bwlch y Ffordd Isa, Llannor (SH 40213967), Maesoglan Farm, Buan (SH 29703791), Capel Peniel, Buan (SH 28743807), Cwmistir Uchaf, Nefyn (SH 25093926), Penybryn, Botwnnog (SH 24763461), Pont Rhyd-Hir, Llannor (SH 34663558), Cae Newydd Mynachdy, Botwnnog (SH 22593178) and King George's Field, Efailnewydd (SH 35283584). Landowners gave permission for survey on all of these except for that at Capel Peniel. It was therefore proposed that another similar cropmark enclosure, recently discovered on Anglesey, should be surveyed as an alternative. This was a cropmark identified by J. Rowlands and D. Roberts at Ynys Bach, near Llanerchymedd (SH 445825). The general locations of the sites are shown on Fig. 1.

2. ACKNOWLEDGEMENTS

Gwynedd Archaeological Trust wishes to thank all of the landowners and tenants who allowed us to carry out surveys on their land: Mr G. Edwards at Bwlch y Ffordd Isa, Mrs G. Jones and Mr I. Jones at Maesoglan Farm, Mr M. H. Edmonds at Cwmistir Uchaf, Capt. and Mrs Wynne-Finch and Mr R. Jones at Penybryn, Mrs O. Jones and Mr H. Williams at Pont Rhyd Hir, Mr H. and Mrs C. Thomas at Cae Newydd Mynachdy, Llannor Community Council at King George's Field and Mr D. M. Parry at Ynys Bach.

3. METHODOLOGY

The technical geophysical survey methods and the design for each site are described separately, below. The general approach was intended to survey the whole of each site, where accessible, including both the interior and defences and at least a sample of the exterior area. Topsoil survey pits were dug on all sites in order to assess the vulnerability of the sites and to assist in the interpretation of the geophysical survey results.

The fieldwork was carried out and the report written by D. Hopewell and G. H. Smith. The aerial photographs and their interpretation are by Dr T. Driver and S. Garfi of RCAHMW.

3.1 Geophysical Survey Methodology

Fluxgate gradiometer survey provides a relatively swift and completely non-invasive method of surveying large areas and is ideal for detecting large-scale features such as ditches, banks and areas of occupation.

3.1.1 Instrumentation

Most of the survey was carried out using a Bartington Grad601-2 dual Fluxgate Gradiometer. This uses a pair of Grad-01-100 sensors. These are high stability fluxgate gradient sensors with a 1.0m separation between the sensing elements, giving a strong response to deeper anomalies. Part of the Ynys Bach site was surveyed using a single sensor Geoscan FM36 which produces results that are compatible with the Bartington Instrument.

These instruments detect variations in the earth's magnetic field caused by the presence of iron in the soil. This is usually in the form of weakly magnetised iron oxides which tend to be concentrated in the topsoil. Features cut into the subsoil and backfilled or silted with topsoil therefore contain greater amounts of iron and can therefore be detected with the gradiometer. This is a simplified description as there are other processes and materials which can produce detectable anomalies. The most obvious is the presence of pieces of iron in the soil or immediate environs which usually produce very high readings and can mask the relatively weak readings produced by variations in the soil. Strong readings are also produced by archaeological features such as hearths or kilns because fired clay acquires a permanent thermo-remnant magnetic field upon cooling. This material can also get spread into the soil leading to a more generalised magnetic enhancement around settlement sites.

Not all surveys can produce good results as anomalies can be masked by large magnetic variations in the bedrock or soil or high levels of natural background "noise" (interference consisting of random signals produced by material within the soil). In some cases, there may be little variation between the topsoil and subsoil resulting in undetectable features. It must therefore be stressed that a lack of detectable anomalies cannot be taken to mean that that there is no extant archaeology.

The Bartington Grad601 is a hand held instrument and readings can be taken automatically as the operator walks at a constant speed along a series of fixed length traverses. The sensor consists of two vertically aligned fluxgates set 1.0m apart. Their Mumetal cores are driven in and out of magnetic saturation by an alternating current passing through two opposing driver coils. As the cores come out of saturation, the external magnetic field can enter them producing an electrical pulse proportional to the field strength in a sensor coil. The high frequency of the detection cycle produces what is in effect a continuous output (Clark 1990).

The gradiometer can detect anomalies down to a depth of approximately one metre. The magnetic variations are measured in nanoTeslas (nT). The earth's magnetic field strength is about 48,000 nT; typical archaeological features produce readings of below 15nT although burnt features and iron objects can result in changes of several hundred nT. The instrument is capable of detecting changes as low as 0.1nT.

3.1.2 Data Collection

The gradiometer includes an on-board data-logger. Readings in the surveys were taken along parallel traverses of one axis of a 20m x 20m grid. The traverse interval was 0.5m at all sites apart from parts of Ynys Bach. Readings were logged at intervals of 0.25m along each traverse giving 3200 readings per grid. The wider area survey at Ynys Bach was conducted at a resolution of 1.0m x 0.5m.

3.1.3 Data presentation

The data is transferred from the data-logger to a computer where it is compiled and processed using ArchaeoSurveyor 2 software. The data is presented as a grey-scale plot where data values are represented by modulation of the intensity of a grey scale within a rectangular area corresponding to

the data collection point within the grid. This produces a plan view of the survey and allows subtle changes in the data to be displayed. This is supplemented by an interpretation diagram showing the main features of the survey with reference numbers linking the anomalies to descriptions in the written report. It should be noted that the interpretation is based on the examination of the shape, scale and intensity of the anomaly and comparison to features found in previous surveys and excavations etc. In some cases the shape of an anomaly is sufficient to allow a definite interpretation e.g. a Roman fort. In other cases all that can be provided is the most likely interpretation. The survey will often detect several overlying phases of archaeological remains and it is not usually possible to distinguish between them. Weak and poorly defined anomalies are most susceptible to misinterpretation due to the propensity for the human brain to define shapes and patterns in random background 'noise'. An assessment of the confidence of the interpretation is given in the text.

3.1.4 Data Processing

The data is presented with a minimum of processing although corrections are made to compensate for instrument drift and other data collection inconsistencies. High readings caused by stray pieces of iron, fences, etc are usually modified on the grey scale plot as they have a tendency to compress the rest of the data. The data is however carefully examined before this procedure is carried out as kilns and other burnt features can produce similar readings. The data on some noisy or very complex sites can benefit from 'smoothing'. Grey-scale plots are always somewhat pixellated due to the resolution of the survey. This at times makes it difficult to see less obvious anomalies. The readings in the plots can therefore be interpolated thus producing more but smaller pixels and a small amount of low pass filtering can be applied. This reduces the perceived effects of background noise thus making anomalies easier to see. Any further processing is noted in relation to the individual plot.

3.2 Topsoil Survey Methodology

The soil survey was carried out in order to complement and extend the above ground survey evidence. Its main aim was to allow a risk assessment for each of the survey sites. This would be based partly on the above-ground evidence of land use and location and partly on the depth of soil cover, evidence of cultivation depth and type of subsoil. The evidence of topsoil depth and type and of subsoil type was also relevant to understanding the results of the aerial and geophysical surveys. It was also possible that some additional information might be gained from discovery of artefacts or by identification of possible features, where pits happened to coincide with features identified by the above-ground surveys.

The soil trial pitting was designed to test the depth of soil cover and record the type of subsoil over the interior and immediate exterior of each enclosure. The survey was carried out by small hand-dug pits, each *c*. 0.30m square located on the 20m grid laid out for the geophysical survey. Each pit was normally excavated at the centre of the metre square at the south-east side of the 20 metre grid point. The pits were excavated as far as the top of the subsoil, or, as far as practicable, where no subsoil was reached, for example over archaeologial features.

The soil pit locations are shown on the plan of each site and the depths of the plough soil and descriptions of the topsoil and subsoil or base of the plough soil are shown in the accompanying tables.

3.3 Aerial photographs

All but one of the aerial photographs were taken by Toby Driver during aerial reconnaissance for RCAHMW. Salvatore Garfi (RCAHMW) produced the rectified images and interpretation. The Ynys Bach aerial photograph was provided by J. Rowlands and D. Roberts of Pixaerial.

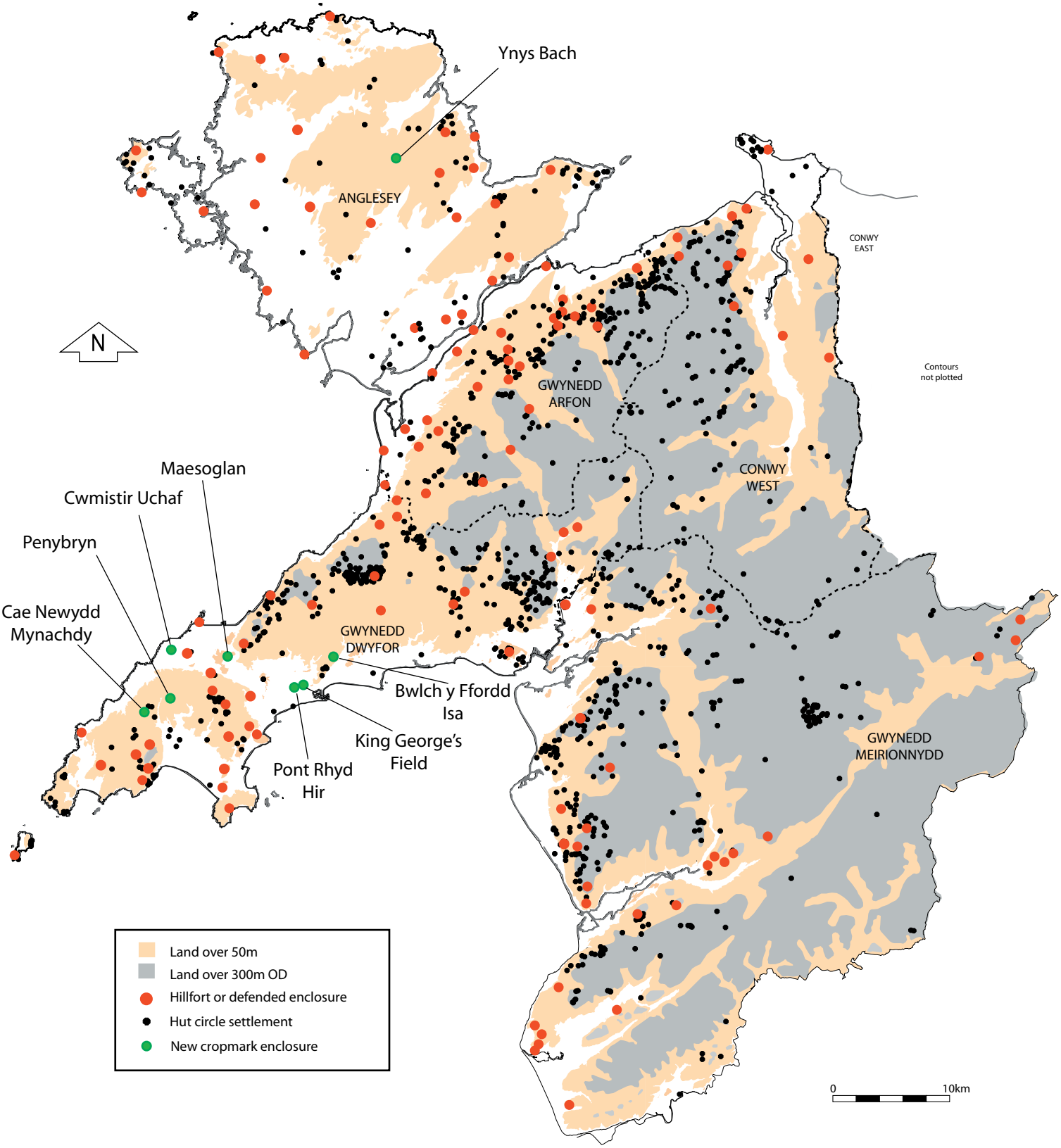

Fig. 1 The location of the new cropmark sites surveyed in 2007-8 in relation to the distribution of all known prehistoric defended and undefended settlements in north-west Wales

4. SURVEY RESULTS

4.1. BWLCH Y FFORDD ISA, LLANNOR

NGR SH40213967

4.1.1 Description and Location (Fig. 2)

The site was discovered during aerial reconnaissance by RCAHMW on 3rd August 2006 (Plates 1 and 2). Cropmarks of a bivallate concentric defended enclosure were recorded at 65m OD on a fairly level spur above a small side valley with a spring-fed former pool at the north and the deeper valley of the Afon Erch at the east. The raised setting would have provided a naturally drained site and the enclosure itself makes use of the steep edges of the spur to make the setting more prominent, even though it may not have been designed to be defensive.

The present field is improved pasture but was probably arable in the past although well-drained and therefore vulnerable to parching.

4.1.2 Geophysical Survey Results

Introduction

Survey conditions were good; the field was open pasture with short grass. An area of 150m x 80m was surveyed at 0.5m x 0.25m resolution. Background noise levels were low.

Results (Figs 3 and 4)

Clear magnetic anomalies were detected indicating a circular ditched enclosure, 40m in diameter with a 16m wide entrance on the west (1). The main enclosure ditch appears to be about 4m wide. Fifteen metre long, close-to-parallel antenna ditches (2 and 3) run out from each side of the entrance. These are relatively slight, perhaps 1 or 2m wide, with the possibility of a second phase running at a more acute angle on the northern side. The interior of the enclosure produced more magnetic noise than its surroundings suggesting magnetic enhancement due to occupation. Three 8m to 9m wide patches of enhancement may indicate the position of round houses (4) with stronger thermoremnant anomalies indicating the position of *in situ* hearths. A rampart would presumably have run along the inside of the ditch but this was not detected as an anomaly. The position of the possible roundhouses 3 to 4m away from the ditch suggest that a rampart would have filled the intervening space. An outer ditch (5) is clearly visible 12 to 20m from the southern side of the enclosure but could not be traced elsewhere. It seems likely that the outer enclosure follows the line of the top of the steep scarp down to the river on the east. There are however two faint curvilinear anomalies in this area that could represent the line of the outer enclosure. The inner (6) runs to within 3m of the circular enclosure. The outer (7) follows a line that is a more obvious continuation of ditch 5. Unfortunately both anomalies are too weak to allow a definite interpretation and are most likely to indicate more recent field boundaries or erosion terraces on the slope. A wide but faint anomaly (8) immediately to the outside of the inner enclosure probably indicates a counterscarp bank.

A series of small discrete anomalies (9) in the north-eastern corner of the field could be interpreted as a series of pits or hearths although they could be assigned to any period from prehistory to modern times. Several other linear anomalies were detected; 10, 11 and 12 are most likely to be modern drains and a series of anomalies (13) probably represent lines of erosion on the steep slope.

4.1.3 Soils (Fig. 5)

The topsoil and the subsoil vary quite a bit over the field, partly because some of it is lower down, off the spur and partly because the subsoil, being fluvio-glacial in origin varies in itself. On the spur the topsoil is gravelly silt, about 0.30m deep. Below the spur the soil is deeper from 0.46 to 0.57m deep, similar but darker in colour, probably plough colluvium.

Five pits, Pits 4, 6, 7, 8 and 9, fall within the overall area of the crop-mark. Only Pits 6 and 9 lie within the main inner enclosure.

Pits 4, 6 and 8 have layers of large cobbles immediately below the topsoil. These might be archaeological horizons. Those in Pits 4 and 8 are outside the main enclosure and could be the remains of spread bank material. Those in Pit 6, inside the enclosure could be part of an internal or external cobbled surface associated with one of the roundhouses.

Pit 13 was well away from the enclosure, at the bottom of the slope, close to a former pool and stream. This also had a layer of cobbles below the topsoil and these included some fire-fractured stones, suggesting that there was a burnt mound close by although they could also have derived from the settlement enclosure.

Table 1 Bwlch y Ffordd Isa, Llannor, Soil Test Pit Survey

Pit No.	***Depth***	***Slope***	***Topsoil description***	***Subsoil description***	***Comment***
1	0.48	Bottom of slope	Dark grey gravelly silt	Buff-brown gravelly silt with small cobbles	Deep gravelly silt, possible positive lynchet
2	0.48	Bottom of slope	Ditto	Ditto	Deep gravelly silt, possible positive lynchet
3	0.33	Bottom of slope	Ditto	Ditto	
4	0.31	Level edge of slope	Ditto to 0.22	Buff-yellow silt with gravel	Layer of cobbles at 0.22, possibly archaeol. layer
5	0.33	Top of slope	Ditto	Buff-yellow silt with gravel	
6	0.32	Top of slope	Ditto	Not bottomed	Layer of large cobbles at 0.21, possibly archaeol. layer
7	0.33	Level	Grey-brown silt with *c*. 5% small gravel up to 10mm dia.	Buff-yellow silt with occasional large pebbles	
8	0.46	Bottom of slope	Dark grey gravelly silt	Not bottomed	Layer of cobbles *c*. 0.15 L at 0.26, poss. archaeol. layer, then dark grey silt continuing
9	0.31	Level	Red-brown silt with *c*. 5% small gravel up to 10mm dia.	Orange silt with *c*. 5% gravel up to 10mm dia.	
10	0.31	Level	Ditto	Ditto	
11	0.26	Slight	Dark grey gravelly silt	Compact, mainly small grit and gravel from 2mm upwards	
12	0.35	Level	Red-brown silt with *c*. 5% small gravel up to 10mm dia.	Orange silt with *c*. 5% gravel up to 10mm dia.	
13	0.43	Bottom of slope	Red-brown gravelly silt, more gravelly below 0.20	Not bottomed	At 0.43 a layer of sub-rounded cobbles up to 0.12L and 3 fire fractured stones

14	0.30	Level	Ditto	Orange silt with *c*. 5% gravel up to 10mm dia.	
15	0.36	Level	Red-brown silt with *c*. 5% small gravel up to 10mm dia.	Ditto	
16	0.57	Bottom of slope	Dark grey gravelly silt, more gravelly below 0.26	Mid-grey clayey silt and 1 cobble 200mm long	
17	0.31	Level	Red-brown silt with *c*. 5% small gravel up to 10mm dia.	Orange silt with *c*. 5% gravel up to 10mm dia.	
18	0.64	Med. slope	Red-brown silt with *c*. 5% small gravel up to 10mm dia., more gravelly below 0.30	Fine gravel up to 8mm long	
19	0.38	Level	Red-brown silt with *c*. 5% small gravel up to 10mm dia.	Orange silt with *c*. 5% gravel up to 10mm dia.	

4.1.4 Discussion

The geophysical survey confirms the aerial photographic evidence. The site consists of an enclosure defended by a substantial ditch with additional antenna ditches running from the edge of the entrance. A roughly concentric outer ditch was detected on the southern side of the site. Both the test pit and geophysical evidence suggest that there is good archaeological preservation within the enclosure.

4.1.5 Conclusions

This is a quite a small settlement enclosure of neat, deliberately circular plan. It had a sizeable ditch that indicates a defensive function, as does the carefully chosen valley promontory location. However, this is at odds with the extremely wide entrance which would have been difficult to fence or gate. The position of the ditch terminals may be somewhat misleading in that the actual entrance gap between the bank terminals can be different to that between the ditch terminals as seen at the fortified Late Iron Age settlement of Walesland Rath, Pembrokeshire, with which Bwlch y Ffordd Isa can be compared (Wainwright 1971). There the gap between the ditch terminals was 11m, whereas the entrance gap between the banks was about 3m. The entrance itself was constructed of two rows of three very large upright timbers presumably incorporating a gate and probably gate tower. Even so, the much wider gap between the ditches of the entrance at Bwlch y Ffordd Isa is difficult to explain.

Walesland was situated on a valley promontory, sub-circular, univallate, of about 0.2ha and occupied, at its peak, by up to seven roundhouses. This compares to the 0.13ha of Bwlch y Ffordd Isa with at three identified roundhouses. Walesland was occupied probably from about the 3rd century BC and through the Roman period and the same may be the case at Bwlch y Ffordd Isa, which could be classified as a small nucleated, defended settlement. However, the neat circular plan and the provision of a smaller, widely spaced concentric outer enclosure suggests an origin earlier in the first millennium or even in the later second millennium BC. The presence of two phases is demonstrated by the way the southern 'antenna' ditch overlaps the outer enclosure ditch. It is possible therefore that the enclosure began as a concentric enclosed settlement and had a single, large central timber roundhouse, traces of which have been masked by later activity.

Wide-spaced antennae ditches are not easily paralleled in excavated enclosures or in surviving earthworks in the north-west apart from the circular concentric enclosed settlement off Llwyn-du Bach, Penygroes, Caernarfon (Bersu and Griffiths 1949). There a relatively narrow entrance was flanked by antennae ditches connecting the inner and outer enclosure ditches, providing a kind of corridor. In south-west Wales the settlements of Dan-y-Coed, Woodside (Williams 1988) and Pen-y-coed (Murphy

1985) all have similar narrow approach corridors flanked by antennae ditches. These sites have a close resemblance to the ‘banjo’ enclosures of Wessex, the design of which has been interpreted as being related to a cattle-keeping economy, although they were clearly settlements at some point, so corralling of cattle would seem inappropriate (Cunliffe 1991, 220-3). There are also other purely domestic settlements that have wider spaced antennae entrances, such as Gussage All Saints, Dorset (Wainwright 1979). Perhaps the most likely explanation for antennae at simple enclosures like Bwlch y Ffordd Isa is that they were designed to stop stock (and perhaps even attackers) from moving into the area between the inner and outer ditches.

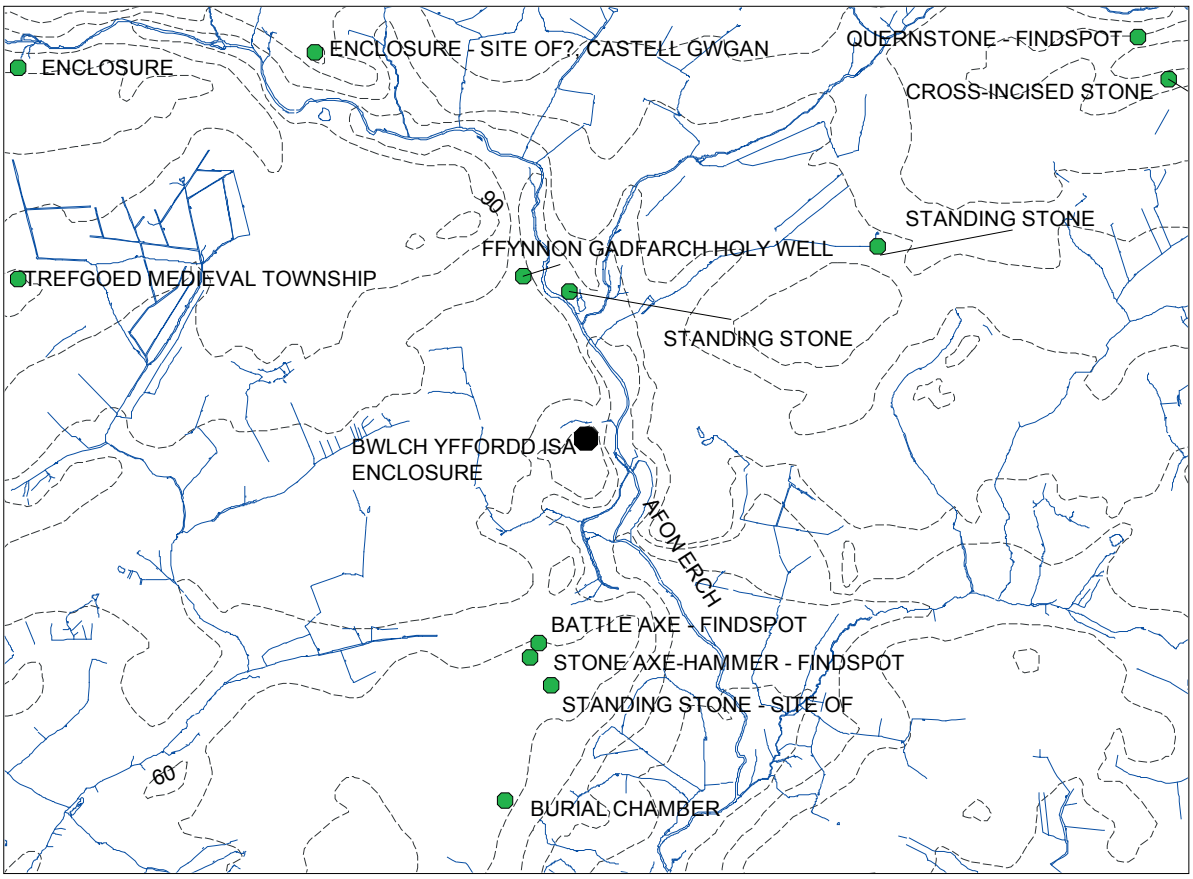

Fig. 2 Bwlch y Ffordd Isa Enclosure, Llannor: Topographic location

Plate 1 Bwlch y Ffordd Isa cropmark
Photograph by Toby Driver 2006. Copyright RCAHMW (AP 2006 4153)

Plate 2 Bwlch y Ffordd Isa, rectified image with interpretation
(NPRN 405339 copyright RCAHMW)

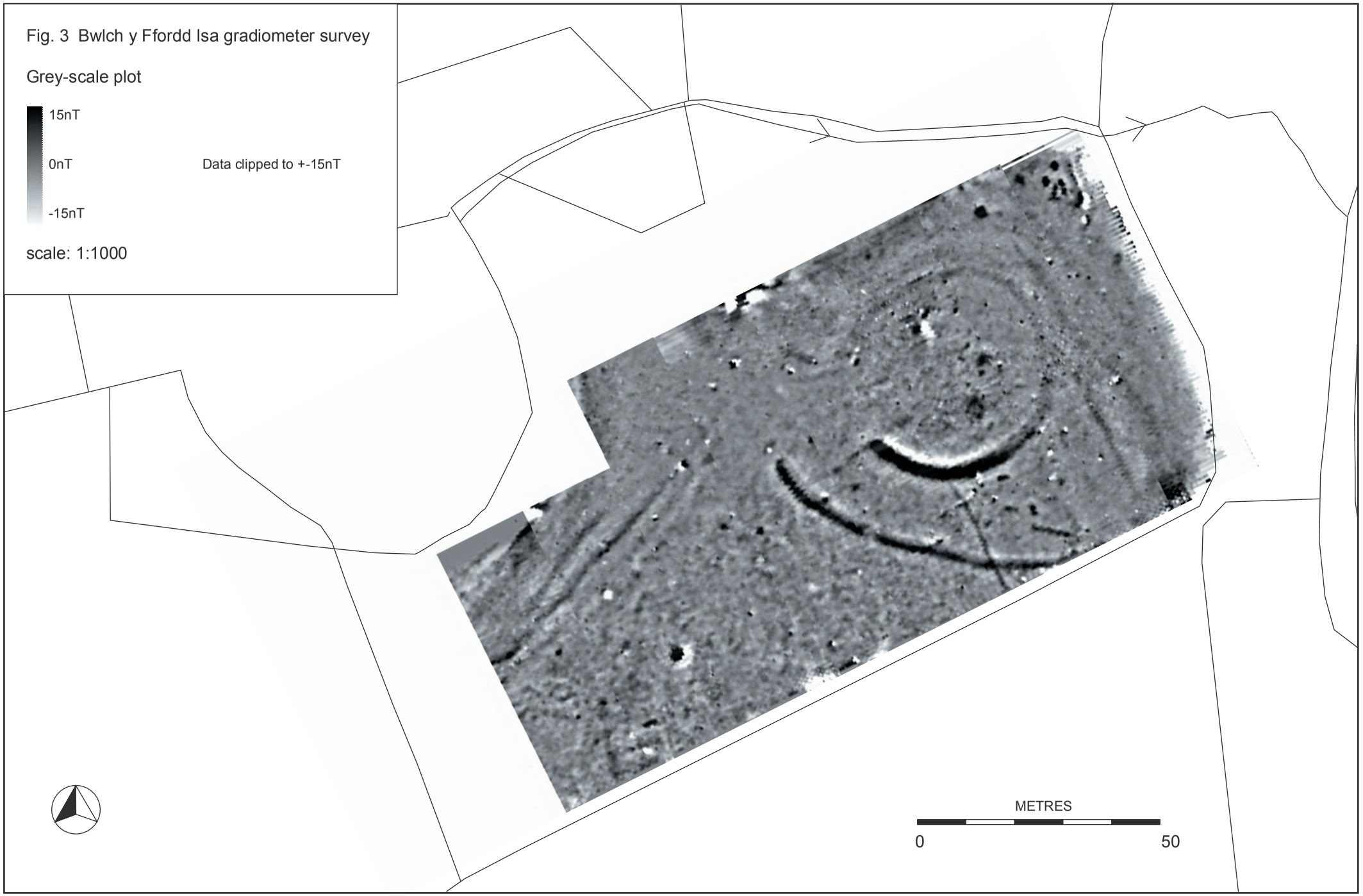
Fig. 3 Bwlch y Ffordd Isa gradiometer survey
Grey-scale plot
15nT
0nT
-15nT
Data clipped to +-15nT
scale: 1:1000
METRES
0
50


Fig. 4 Bwlch y Ffordd Isa gradiometer survey
Interpretation
scale: 1:1000
1
2
3
4
5
6
7
8
9
10
11
12
13
METRES
0
50

Fig. 5 Bwlch y Ffordd Isa: Location of the the soil test pits in relation to the geophysical survey

4.2. MAESOGLAN FARM, BUAN

NGR SH29703791

4.2.1 Description and Location (Fig. 6)

RCAHMW discovered this sub-circular enclosure during aerial reconnaissance on 3rd August 2006 (Plates 3 and 4). Traces of an outer bank were identified on the western side. It lies at 55m OD on a small but prominent hillock which falls away quite steeply on the west and south, but more gently on the east and north. The land is all permanent pasture but has been arable in the past as demonstrated by the numerous cultivation marks visible on the aerial photograph. Some of the field boundaries have changed since the lay-out seen on the 1889 1:2500 Ordnance Survey map. Even at that date the enclosure had completely disappeared and there were no remnants of it in the pattern of field boundaries. At the south-west side of the enclosure is a spring, which drains as a small stream down the valley to the west. The available supply of water must have been the reason for the location of the present farm and probably also of the prehistoric enclosure.

4.2.2 Geophysical Survey Results (Figs.7 and 8)

Introduction

The site is located on a ridge and bisected by a field boundary. Survey conditions were good on the eastern side of the boundary. A limited area was available for survey on the western side due to a thick growth of gorse. Background noise levels were fairly high. An area of 80 x 60m was surveyed at a resolution of 0.5 x 0.25m.

Results

The survey detected a large amount of anomalies, some arising from the natural substrate and some from agricultural activities. The ditch detected on aerial photographs was faintly visible (1) indicating the presence of an oval enclosure with dimensions of 40m x 35m. The enclosure was very poorly defined and no further details such as an entrance or internal features could be seen. Further anomalies (2 to 5) could indicate an outer ditch but a definite interpretation is not possible due to their poor definition. Further linear anomalies (6 to 9) are probably recent boundaries and larger scale anomalies 11 to 12 are probably a result of natural changes in the subsoil or bedrock.

4.2.3 Soils (Fig 9)

The soil pits show that the topsoil is very shallow on top of the hillock, from a minimum of 0.20m and becomes deeper off the sides of the hill, outside the area of the enclosure, to 0.52m towards the stream at the south-east and to 0.71m towards the spring at the west. The latter is in a slight valley and close to the line of a former field boundary bank, seen on the 1889 OS map and the greater depth of soil probably includes material from the demolished field bank.

The topsoil is sandy loam and the subsoil sand and fine gravel. The shallowness of the topsoil combined with the well-drained subsoil makes it vulnerable to parching. However, it would be easily worked and attractive for prehistoric cultivation. The shallow topsoil cover over the area of the enclosure means that it has probably been heavily eroded by Post-medieval ploughing. Similarly it would be very vulnerable to any future ploughing although this seems unlikely at present and the farm is in the Tir Gofal scheme.

Table 2 Maesoglan Farm, Buan, Soil Test Pit Survey

Pit No.	***Depth***	***Slope***	***Topsoil description***	***Subsoil description***	***Comment***
1	0.27	Medium	Dark brown sandy loam with scattered pebbles up to 50mm L	Orange-brown sand with *c*. 30% gravel	
2	0.57	Slight	Ditto	Ditto	
3	0.20	Slight	Ditto	Ditto	
4	0.26	Slight	Ditto	Ditto	
5	0.23	Level	Ditto	Orange-brown sand with *c*. 50% gravel	
6	0.31	Level	Ditto	Ditto	
7	0.24	Level	Ditto	Orange-brown sand	
8	0.37	Level	Ditto	Grey-brown sand	Possible positive lynchet
9	0.71	Level	Ditto	Buff-grey silt	Possible positive lynchet

4.2.4 Discussion

The geophysical survey did not produce clear results probably because very shallow topsoil had led to many agricultural activities cutting features in to the subsoil thus masking or removing the earlier features. The presence of the oval enclosure was confirmed but evidence for a concentric outer ditch was inconclusive.

4.2.5 Conclusions

This sub-circular enclosure comprises an area of 0.1 ha, slightly smaller than that of Bwlch y Ffordd Isa and seems to have suffered poor survival so that little can be said as a result of the survey. It is a small enclosure, apparently also with a small ditch. The small size of the ditch and the possible presence of another similar outlying concentric ditch suggest that the site may be a quite early undefended settlement of late 2nd or early 1st millennium BC date, comparable to Meyllteyrn Uchaf, Llŷn (Ward and Smith 2001). As such it would be quite a rare and valuable site and worthy of further investigation, which could only be achieved by excavation within the enclosure.

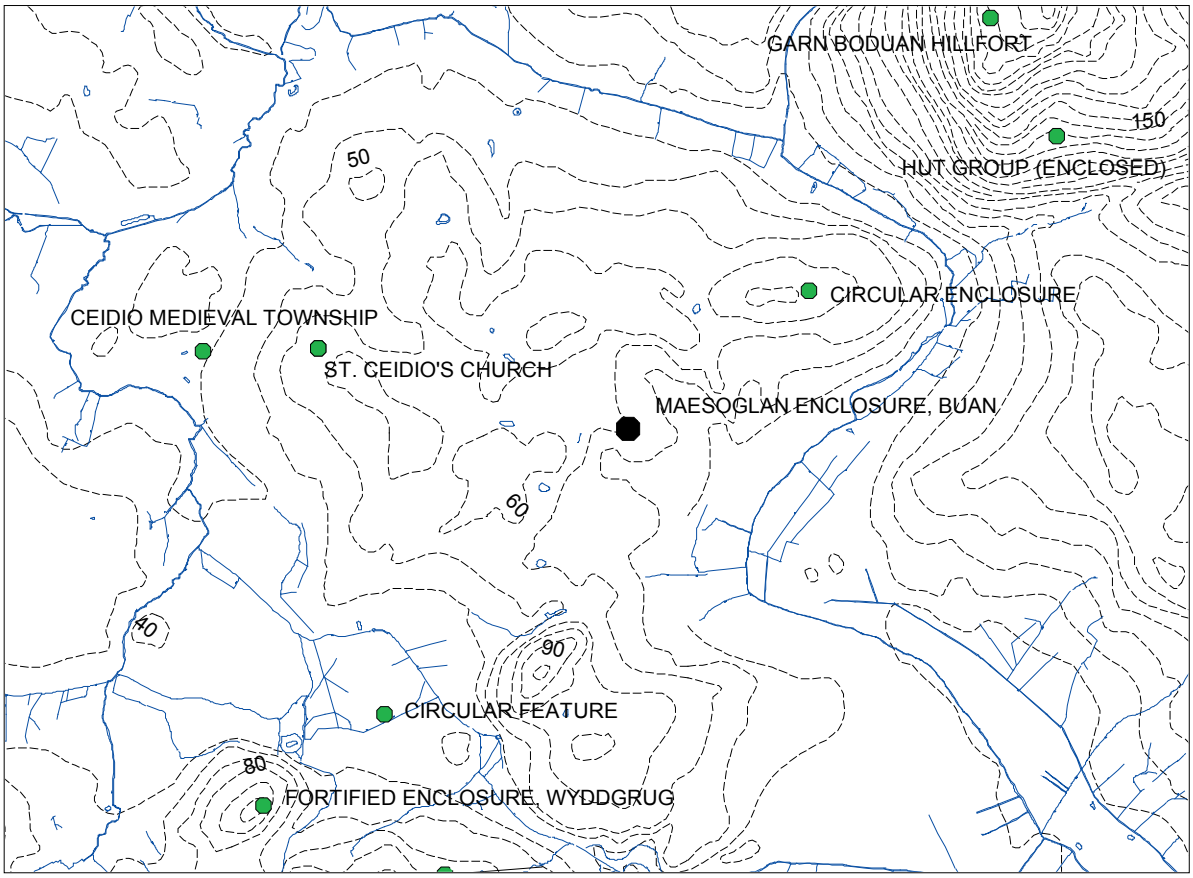

Fig. 6 Maesoglan enclosure, Buan: Topographic location

Plate 3 Maesoglan Farm cropmark
Photograph by Toby Driver 2006. Copyright RCAHMW (AP 2006 4064)

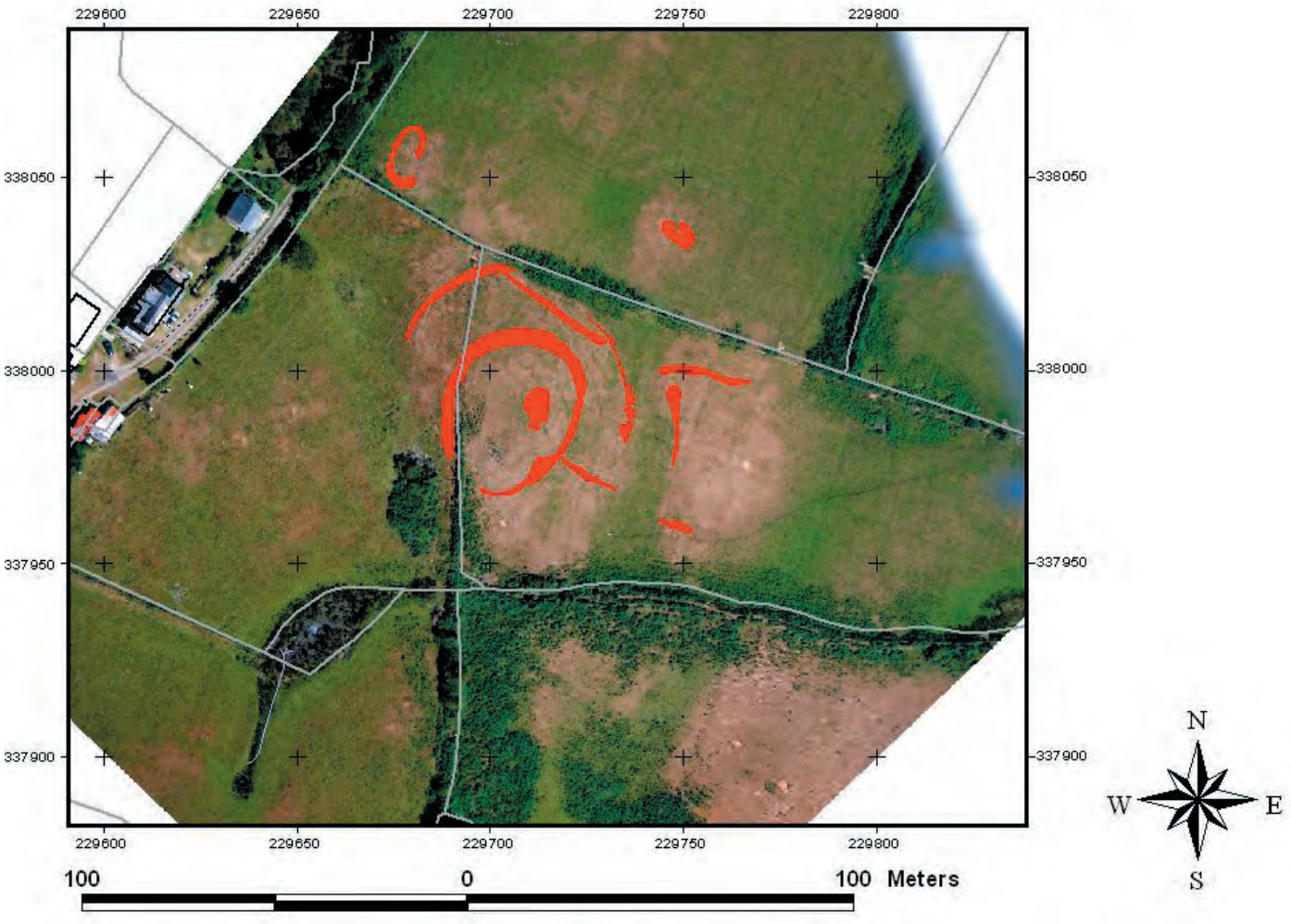

Plate 4 Maesoglan Farm, rectified image with interpretation
(NPRN 405347 copyright RCAHMW)


Fig. 7 Maesoglan gradiometer survey
Grey-scale plot
15nT
0nT
-15nT
Data clipped to +-15nT
scale: 1:1000
METRES
0
50


Fig. 8 Maesoglan gradiometer survey
Interpretation
scale: 1:1000
1
2
3
4
5
6
7
8
9
10
11
12
METRES
0
50

Fig. 9 Maesoglan Farm, Buan: Location of the the soil test pits in relation to the geophysical survey

4.3 CWMISTIR UCHAF, NEFYN

NGR: SH25093926

4.3.1 Description and Location (Fig. 10)

This sub-circular univallate enclosure was again discovered as a cropmark by RCAHMW (Plate 5). It lies at 40m OD on the almost level top of a low ridge which slopes very gently to the north and south. Its position does not have any specific prominence to suggest that this was a defensive location although it has wide views to the north and south.

The enclosure overlaps the junction of three modern rectangular fields, which have high field banks. The fields are at present grass pasture but have clearly been well-ploughed in the past. The corner of one of the fields at the north-east has recently been used for storing scrap farm machinery and equipment. The field banks bear no relation to the enclosure which must have been completely levelled before the fields were laid out. This area is some of the best agricultural land in Llŷn and was Medieval monastic plough land. A quite different pattern of fields must once have existed before the large rectangular fields were laid out.

4.3.2 Geophysical Survey Results (Figs 11 and 12)

Introduction

Survey conditions were generally good but initial scanning indicated high levels of ferrous contamination in the soil presumably because smaller pieces of scrap iron remain in the topsoil in the area of the former scrap store. An area of 80m x 80m was surveyed at a resolution of 0.5 x 0.25m

Results

The survey revealed an almost circular anomaly with dimensions of 40m x 42m which is best interpreted as a ditched enclosure (1). The ditch appears to be about 3m wide. No entrance was detected and it is likely that it is beneath the field bank or within the area cut by the lane. A faint negative anomaly on the inside of the ditch could indicate a 3-4m wide bank (2). The results from the rest of the interior are masked by strong magnetic responses produced by the scrap iron in the soil (3-6).

There are several weak curvilinear anomalies outside the enclosure. These could be interpreted as the boundaries of small fields or paddocks but are most likely to be the result of periglacial features in the subsoil. A row of small evenly spaced anomalies cross the northern corner of the survey (10). These appear to be a line of pits or post-holes. This could be interpreted as part of a prehistoric pit alignment but further survey would be required in order to discount more modern features.

4.3.3 Soils (Fig. 13)

The topsoil is fairly uniform medium brown sandy silt with some pebbles mainly between 20-40mm long. It varies in depth from 0.25m outside the enclosure at the north to 0.4-0.5m outside the enclosure at the south. The subsoil is orange-brown sandy silt, with variable amounts of gravel. The geophysical survey suggests that the subsoil includes a network of periglacial ice-wedge polygons, probably of gravel.

One pit, Pit 7, fell within the enclosure but this showed nothing different to the pits in the rest of the area. Another pit, Pit 5, according to the survey should lie over the enclosure ditch, but again this showed nothing different to the other pits.

The topsoil in one pit, Pit 2, produced a small flint blade. This is probably of Mesolithic or Early Neolithic date and probably just part of a scatter unrelated to the enclosure. The gravel of the subsoil includes pebbles of flint and black chert and where this eroded out of the nearby coastal cliffs would have been used as a source of raw material for stone tools.

Table 3 Cwmistir Uchaf, Nefyn, Soil Test Pit Survey

Pit No.	*Depth*	*Slope*	*Topsoil description*	*Subsoil description*	*Comment*
1	0.25	Level	Mid brown sandy loam with occasional flint and black chert pebbles *c*. 20-40mm L	Orange-brown sandy silt	
2	0.28	Level	Ditto	Orange-brown sandy silt with some larger pebbles	Includes 1 struck flint flake
3	0.40	Level	Ditto	Orange-brown sandy silt with some gravel	
4	0.42	Level	Ditto	Orange-brown sandy silt with some gravel and an area of buff silt	Possible silt-filled periglacial feature
5	0.39	Level	Ditto	Orange-brown sandy silt	
6	0.42	Level	Ditto	Ditto	
7	0.30	Level	Ditto	Orange-brown sandy silt with some gravel	
8	0.50	Level	Ditto	Ditto	
9	0.41	Level	Ditto	Orange-brown sandy silt	
10	0.44	Level	Ditto	Orange-brown sandy silt with some gravel	
11	0.43	Level	Ditto	Ditto	

4.3.4 Discussion

The survey has confirmed the presence of a circular ditched enclosure. Unfortunately the surveyable part of the interior is largely masked by ferrous contamination. A prehistoric pit row may pass through the northern part of the survey and a series of small fields or enclosures may lie to the south and west of the enclosure.

4.3.5 Conclusions

This is a very neat regular circular enclosure of about 0.13ha internally. It had a sizeable ditch which would suggest it was defended settlement although the location is not at all naturally defensive. It is also about 400m metres from the nearest natural water supply. Considering these, with the very regular circular plan it must be a possibility that this is a Neolithic or Bronze Age ceremonial monument, not a later defended site, something that only excavation could answer.

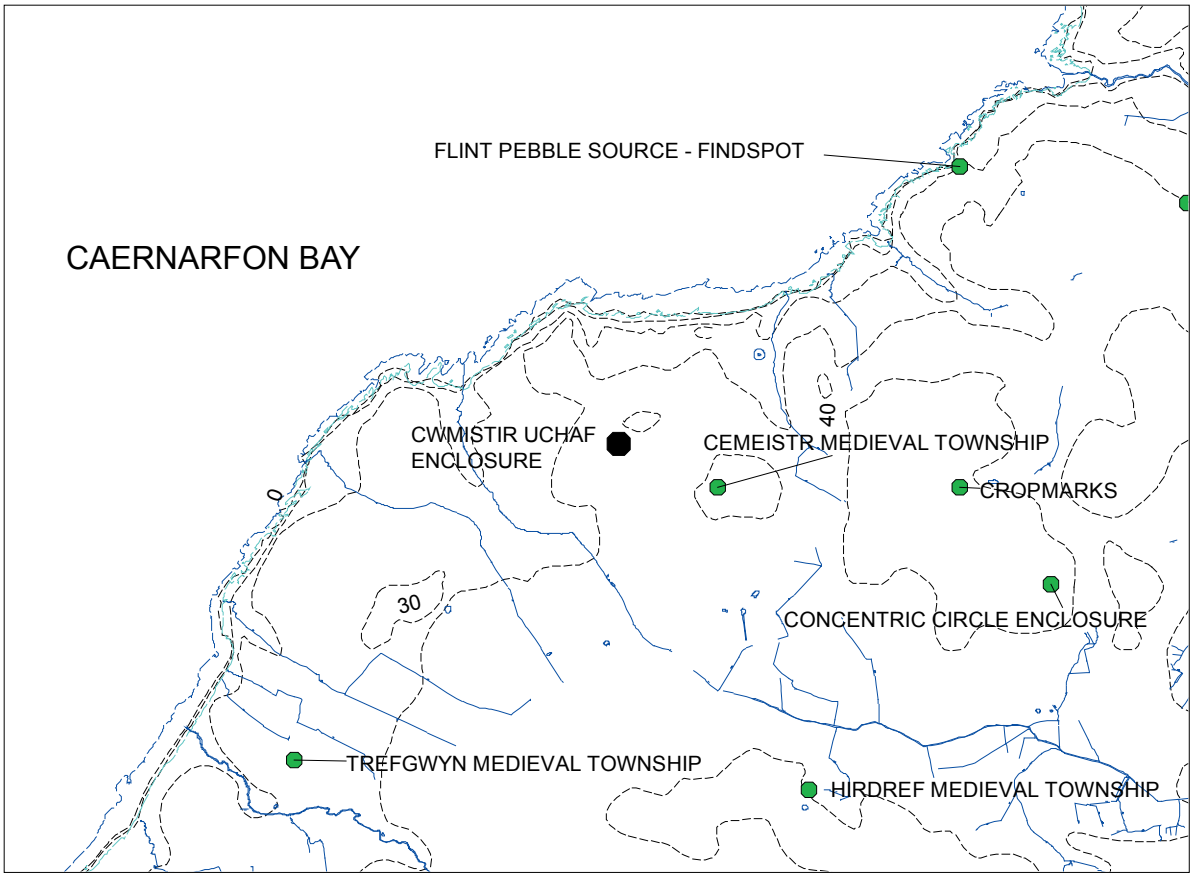

Fig. 10 Cwmistir Uchaf enclosure, Nefyn: Topographic location

Plate 5 Cwmisir Uchaf cropmark
Photograph by Toby Driver 2006. Copyright RCAHMW (AP 2006 4075)

Fig. 11 Cwmistir Uchaf gradiometer survey

Grey-scale plot

15nT

0nT

-12nT

Data clipped to +-15nT

scale: 1:1000

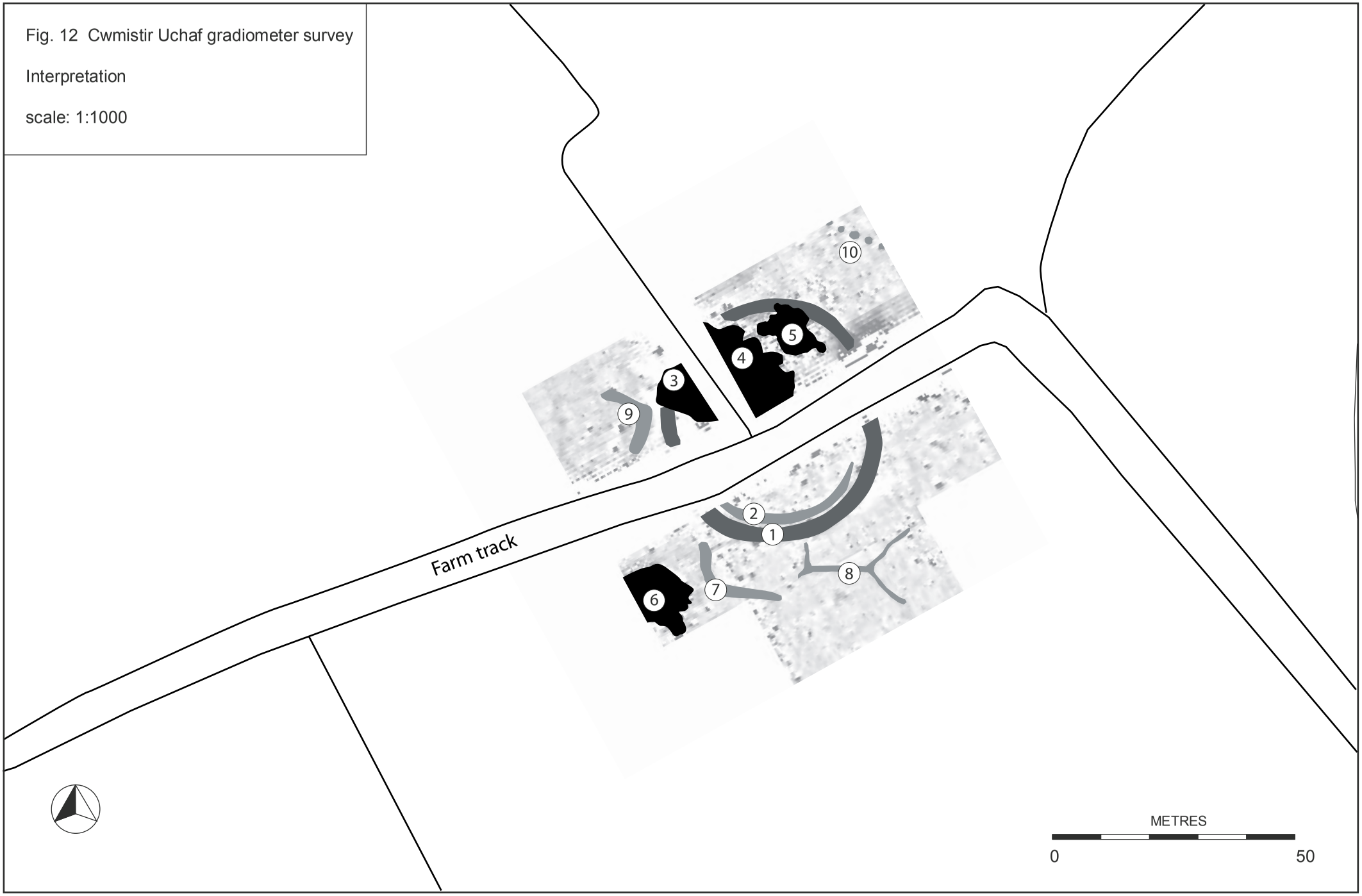
Fig. 12 Cwmistir Uchaf gradiometer survey
Interpretation
scale: 1:1000
Farm track
1
2
3
4
5
6
7
8
9
10
METRES
0
50

Fig. 13 Cwmistir Uchaf, Nefyn: Location of the the soil test pits in relation to the geophysical survey

4.4 PENYBRYN, BOTWNNOG

NGR: SH24763461

4.4.1 Description and Location (Fig. 14)

This cropmark, discovered by RCAHMW, was interpreted as being a small sub-circular enclosure with antenna ditches flanking an entrance on the western side (Plates 6 and 7). It lies at 100m OD on a medium-sloping hillside towards the bottom of the valley of the Afon Soch and just above a spring. The probably original farm-cottage of Tai'r Dŵr, now derelict, lies just below the spring. The 19th century cottage of Penybryn lies further up the slope.

This field and those immediately around it are all presently grass pasture but some fields in the area are arable and all appear to have been cultivated in the past. A complex pattern of small sub-rectangular fields existed here at the time of the 1889 1:2500 Ordnance Survey but these have now been amalgamated into larger fields by removal of hedge banks. The field containing the enclosure consisted of three fields in 1889 and the boundary of one of these crossed the position of the enclosure. The existing field boundaries are quite tall banks of silt and gravel with adjoining ditches. One open ditch, probably from another spring, also runs down the north side of the field. A second smaller roughly rectangular cropmark was also recorded by RCAHMW at the western end of the field.

4.4.2 Geophysical Survey Results (Figs 15 and 16)

Introduction

An area with maximum dimension of 160m x 80m was surveyed at a resolution of 0.5 x 0.25m. Background noise levels were generally low although there were some larger scale variations across the survey caused by changes in the subsoil or bedrock. A scatter of small dipoles across the site indicates scraps of iron in the topsoil.

Results

The ditch of the enclosure produced a clear sub-circular anomaly with dimensions of 34m x 38m (1) The ditch appears to be at least 2m wide and produced unusually strong responses on the south-eastern side. This may be the result of iron-panning as opposed to material such as burnt stones dumped in the ditch fill which would have produced a more random signal. The position of an entrance is not clear. The aerial photograph shows a break in the ditch on the western side but this is not wholly supported by the geophysical evidence. The ditch anomaly is less well- defined in this area (2) but clearly continues along the western side of the enclosure. The less-clear length of ditch could be interpreted as a 7m wide, later phase entrance where the original ditch has been infilled. A narrow break in the ditch (3) on the north of the enclosure appears to represent a narrow entrance. The two antenna ditches at the west do not run from the edge of the possible entrance but are set back by about 4 metres. This does not conform to the usual morphology (c.f. Bwlch y Ffordd Isa and examples shown in James 1984) where the ditches are contiguous with the defences and bound a trackway running to the entrance. The northern antenna (4) appears to curve towards and join the defences of the enclosure, either indicating that it formed part of contemporary field or paddock or that it was a later boundary that incorporated the extant earthwork of the enclosure. Faint anomalies suggest that the east-west part of the ditch continues to the west beyond the turn of the antenna (5). The southern 'antenna' is less well-defined and wider than the northern and the out-turn produced a barely discernable anomaly. An anomaly (7) also occurring within the enclosure appears to be aligned with it suggesting that the antenna may be a quite late feature, unrelated to the settlement.

A roughly circular anomaly (8) in the interior of the enclosure is best interpreted as the drainage ditch of a roundhouse with a diameter of 6-7m. A curvilinear anomaly 9, to its south, could indicate a small yard or paddock.

More recent field boundaries shown on early 20th century ordnance survey maps and visible as low earthworks in the field produced clear anomalies (10) including a strong ferrous or thermoremnant anomaly (11) that could indicate the site of a clearance bonfire. The cropmark at the western end of the survey did not produce a geophysical anomaly and was probably a result of landscaping around the

natural springs in this part of the field. An area of strong anomalies (12) in this area is probably a result of geology or dumping of ferrous materials, but could be a burnt mound given its proximity to the nearby stream. Narrow parallel anomalies at the east of the survey (13) are best interpreted as modern drains or plough scarring.

4.4.3 Soils (Fig. 17)

The soil pits show that the field has been permanent pasture for a considerable time allowing a humic stone-free upper topsoil to develop down to about -0.20m. This is a mid-grey silty loam. Below this is another 0.15-0.30m of similar soil but yellower in colour, containing a proportion of mixed-in subsoil, and this is the remnant of the former plough soil. The subsoil is fluvio-glacial of buff to buff-yellow silt with varying amounts of pebbles and patches of iron staining and manganese. The varying amounts of pebbles suggest that the subsoil is not uniform.

The depth of the topsoil varies between 0.28 to 0.49m and is slightly shallower in the area immediately down slope from the enclosure. The deepest soil was found at the north where the ground dips slightly into an open ditch.

Two pits, Pits 9 and 7 showed slight anomalies. Pit 9 was down slope from the enclosure between the 'antennae' ditches and therefore possibly within the entrance. At the base this was the only pit where the subsoil was light grey silt, possibly through waterlogging in a trampled entrance 'forecourt'. Pit 7 was the only pit within the enclosure and lay on the line of a geophysical anomaly interpreted as the external drainage ditch of a roundhouse. The topsoil was slightly deeper here and in the lowest part were several angular pieces of coarse, broken, fire-cracked stone, the largest 200mm long. These are likely to be detritus from domestic activity within the enclosure.

Table 4 Penybryn, Botwnnog, Soil Test Pit Survey

Pit No.	***Depth***	***Slope***	***Topsoil description***	***Subsoil description***	***Comment***
1	0.44	Medium	Mid-grey-brown silty loam with occasional pebbles	Buff silt with occasional pebbles	Below -0.20m the topsoil becomes slightly yellow indicating a lower plough soil with a humic build-up of the pasture above.
2	0.38	Medium	As 1	Buff-yellow silt with iron patches and occasional pebbles	
3	0.49	Medium	As 1	As 1	
4	0.38	Medium	As 1	As 2 but more stones	
5	0.47	Medium	As 1 but more stones	As 4	
6	0.38	Medium	As 1	As 1	
7	0.42	Medium	As 1	As 1	Lower topsoil includes several pieces of heat fractured stone up to 0.20m long
8	0.28	Medium	As 1	As 4	
9	0.36	Medium	As 1	Light grey silt with scattered pebbles	
10	0.30	Medium	As 1	As 4	
11	0.34	Medium	As 1	As 2	
12	0.30	Medium	As 1	As 2	

4.4.4 Discussion

The geophysical survey produced fairly clear results that appear to contradict some of the aerial photographic evidence. A wide entrance on the west shows clearly on the aerial photograph but the geophysical survey shows a continuation of the ditch. A change in the character of the geophysical anomaly in the area of the possible entrance could indicate that the ditch had been backfilled in this area to form a causeway in a phase of secondary use. This cannot however be proven without excavation although evidence from the test pits adds a little weight to this hypothesis. The out-turning antenna ditches appear to be quite convincing on the aerial photograph but the geophysical survey evidence is again contradictory suggesting that they are later features. Unfortunately the results are not clear enough to prove this although the position of the antennae, set back from the entrance, would appear to be anomalous.

The geophysical survey suggests that there is significant preservation of archaeology within the enclosure with one roundhouse, a possible paddock and a general elevation in magnetic noise indicating the remains of occupation horizons.

4.5.5 Conclusions

This small oblate circular enclosure comprises an internal area of about 0.07ha. It appears to be a small homestead with a single roundhouse although this could be just a late phase with earlier houses masked by later activity. There is an indication that the enclosure saw a second phase of use marked by the addition of the wide-spaced antennae ditches. Alternatively, the settlement could have started off as a lightly ditched concentric circle enclosure and later been strengthened into a strongly ditched univallate enclosure. At present this seems less likely, because the survey suggests that the main ditch was partly backfilled between the antennae ditches. Certainly these antennae ditches are quite slight and irregular compared to the main enclosure ditch and could prove to be part of a wider prehistoric field system if a larger area was surveyed. The entrance marked by these ditches is oriented down slope towards the nearby spring at the north-west. The difficulty over interpretation of the antennae ditches is the same as that discussed above for Bwlch y Ffordd Isa.

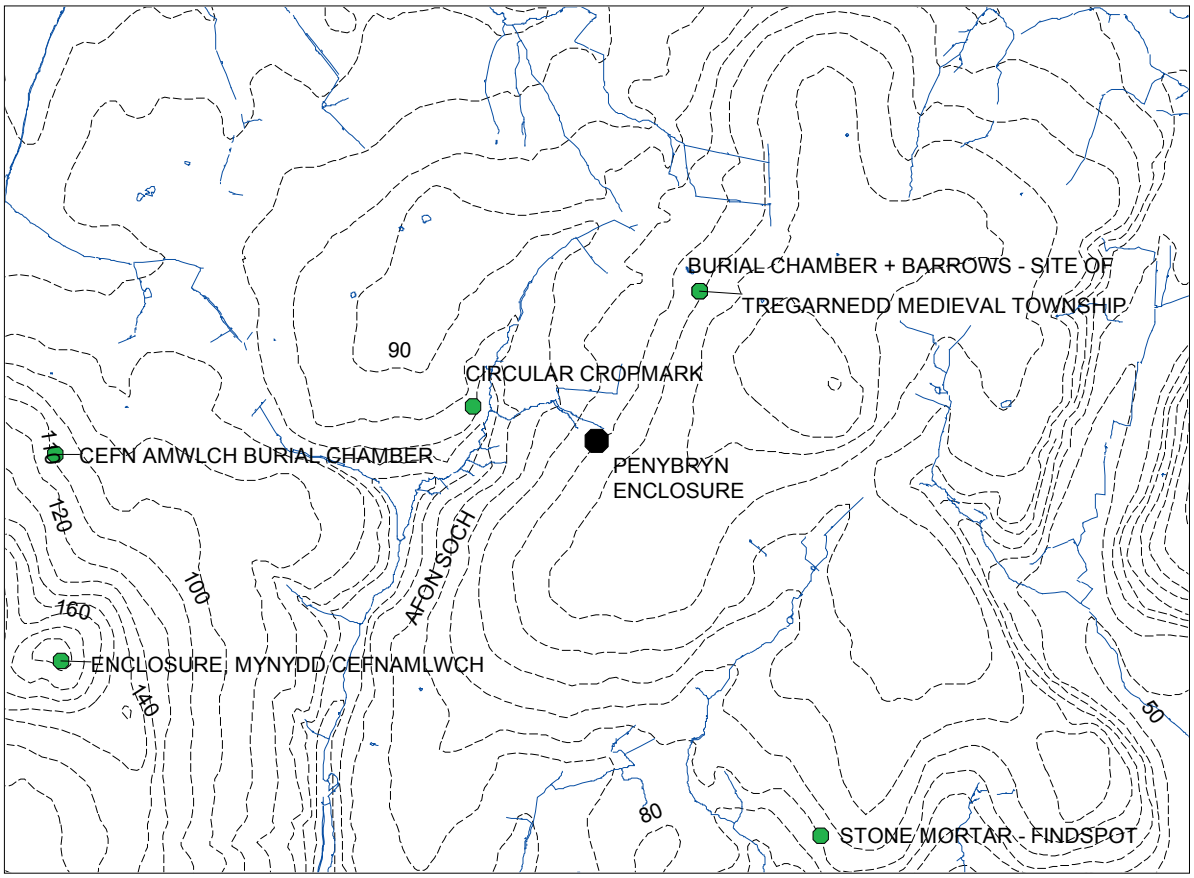

Fig. 14 Penybryn enclosure, Botwnnog: Topographic location

Plate 6 Penybryn cropmark
Photograph by Toby Driver 2006. Copyright RCAHMW (AP 2006 4079)

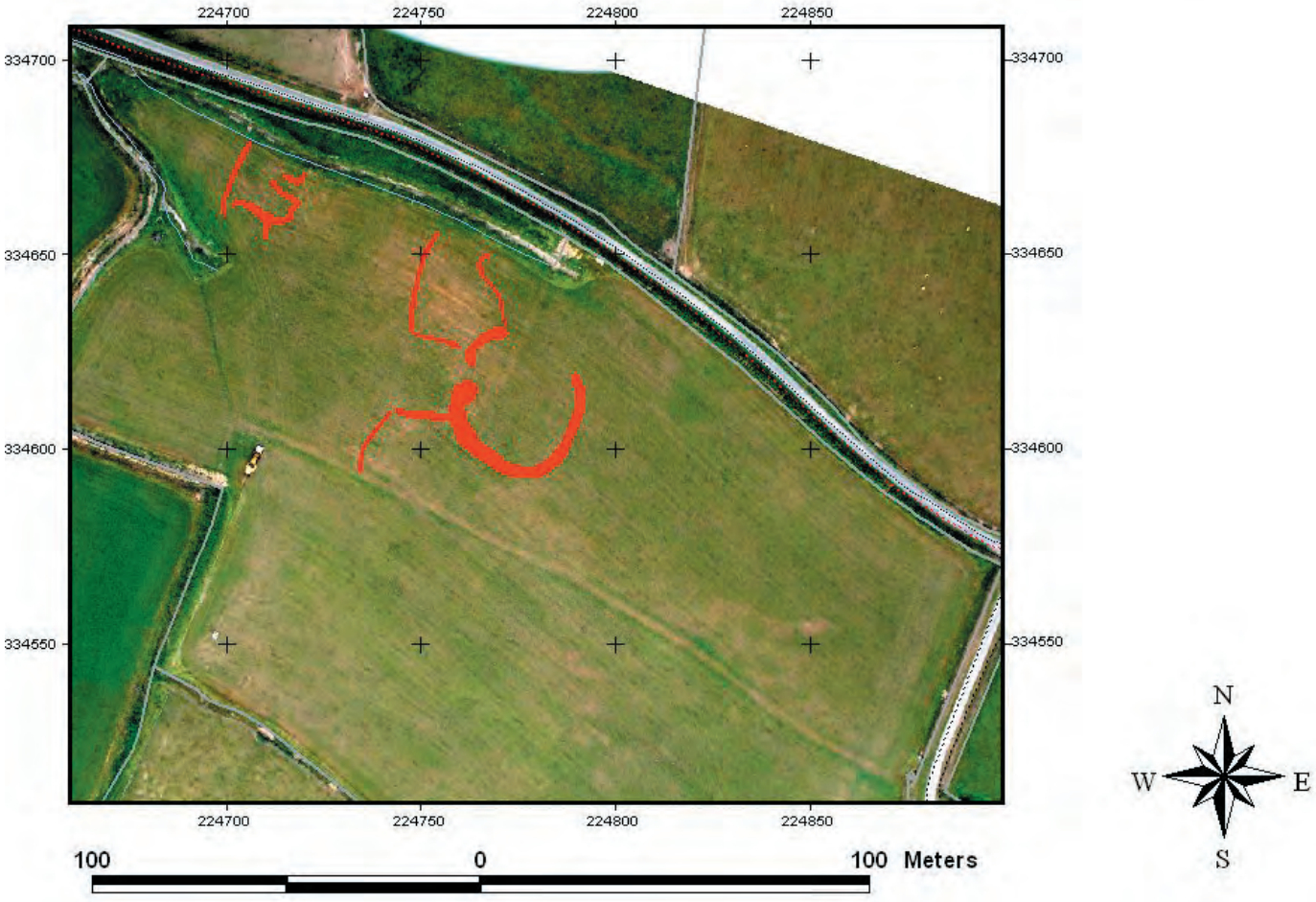

Plate 7 Penybryn, rectified image with interpretation
(NPRN 405351 copyright RCAHMW)

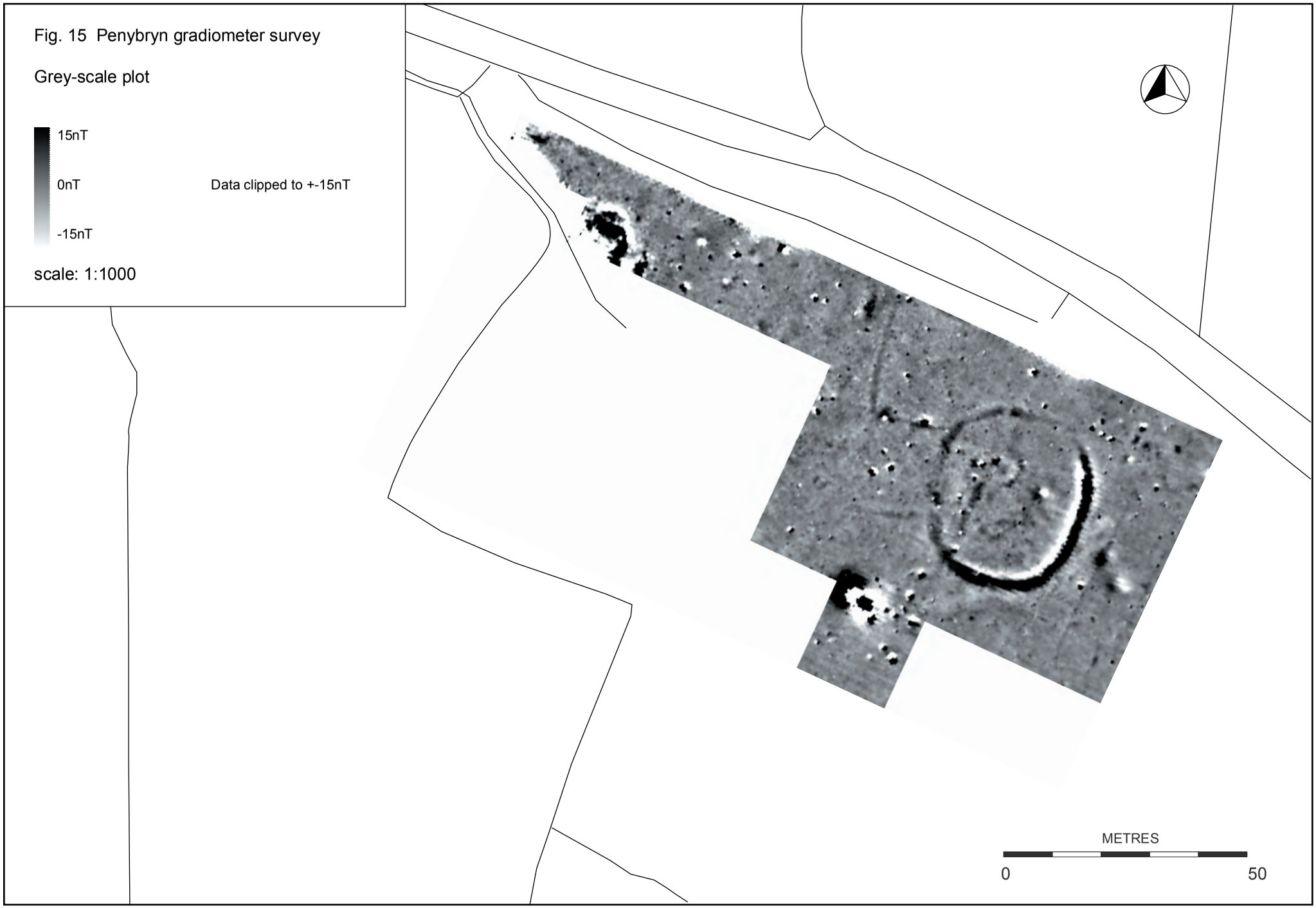
Fig. 15 Penybryn gradiometer survey
Grey-scale plot
15nT
0nT
-15nT
Data clipped to +-15nT
scale: 1:1000
METRES
0
50


Fig. 16 Penybryn gradiometer survey
Grey-scale plot
15nT
0nT
-15nT
Data clipped to +-15nT
scale: 1:1000
12
5
4
3
2
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METRES
0
50

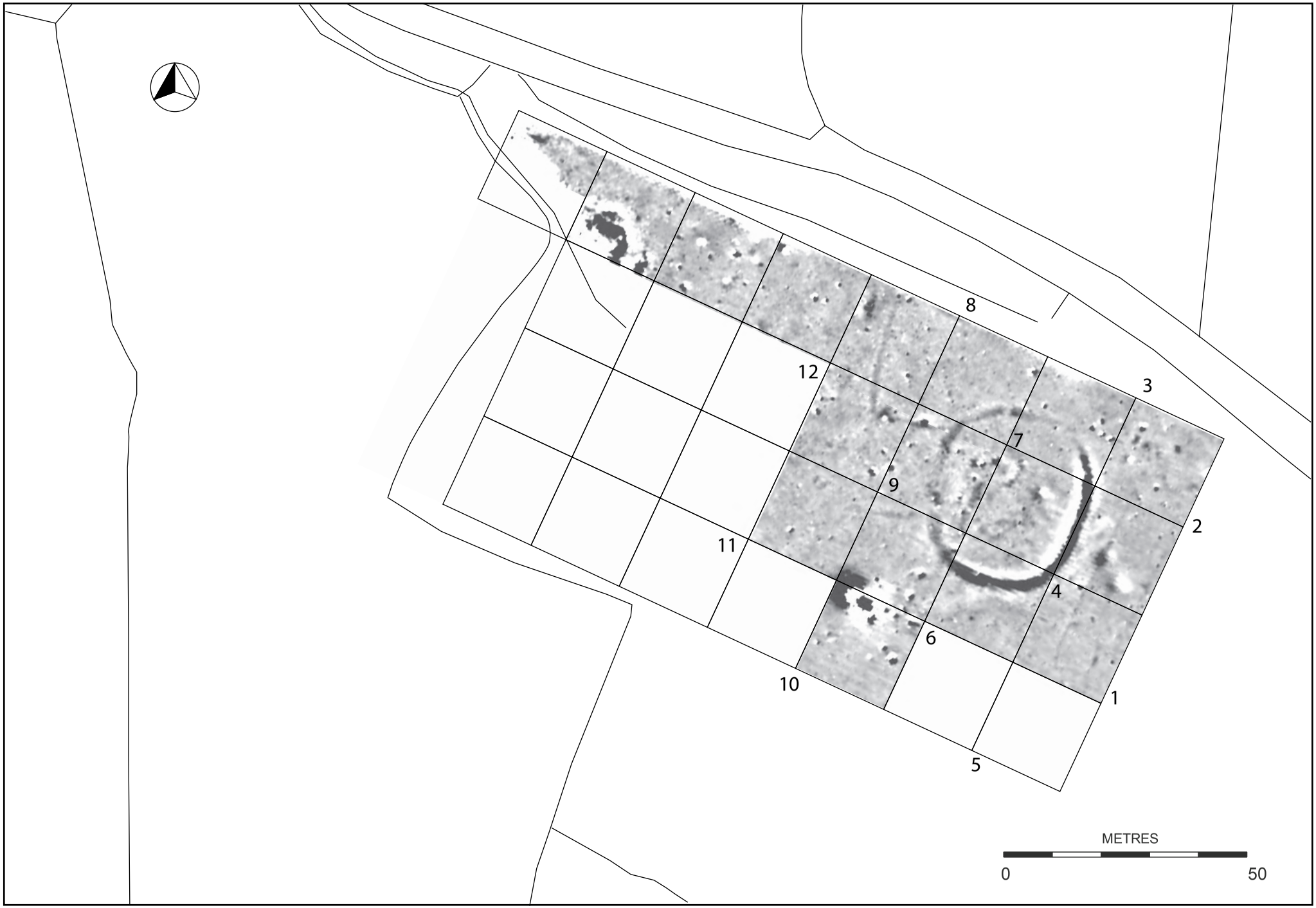


Fig. 17 Penybryn, Botwnnog: Location of the the soil test pits in relation to the geophysical survey

4.5 PONT RHYD HIR, LLANNOR

NGR: SH34663558

4.5.1 Description and Location (Fig. 18)

A complex crop-mark consisting of a sub rectangular enclosure, rounded at the south-west end and a series of criss-crossing linear anomalies was recorded by RCAHMW (Plates 8 and 9). This enclosure lies on an almost level area at 10m OD by the side of the small valley of the Afon Rhyd Hir. The area of the enclosure is visible in the field as a slight sub-circular 'scoop', terraced in at the east and terraced out slightly at the west where the slope dips down into the valley (Fig. 19). The field and those around it are presently grass pasture but must have been ploughed for arable in the past. The present field system consists of large sub-rectangular fields, presumably laid out as part of 19th century estate improvements, now part of the Penmaen Estate although farmed by nearby Hendre.

4.5.2 Geophysical Survey Results (Figs 20 and 21)

Introduction

An area of 140m x 110m was surveyed at 0.25m x 0.5m resolution. Surveying conditions were good with moderate levels of background noise caused by variations in the subsoil along with fairly high levels of iron scraps in the topsoil (visible as small half black, half white dots on the grey-scale plot).

Results

The sub-rectangular enclosure produced a fairly clear anomaly with dimensions of 60m x 41m. The north-eastern end is close to rectangular with a semi-circular south-western end. The enclosure is bounded by a positive anomaly indicating a ditch roughly 2m wide (1). A second parallel ditch (2), also seen on the aerial photograph, was intermittently detected 2-3m inside the outer. A faint negative anomaly (3) immediately inside the outer ditch, and between the two ditches, where visible, probably indicates the ploughed down remnants of a bank. A narrowing or small break in the outer ditch and a break in the inner could indicate a narrow entrance (4) on the south of the enclosure. No internal features were detected and there was no noticeable elevation of background noise within the enclosure that would indicate the presence of occupation deposits.

Some of a series of possible pits detected on the aerial photograph towards the eastern side of the survey area produced geophysical anomalies along with a sub-circular anomaly about 10m in diameter (7) that could be interpreted as a small barrow.

The rest of the survey is dominated by at least three phases of field boundaries. The earliest appears to be an irregular enclosure (5) aligned with and possibly adjoining sub-rectangular enclosure (1). This could indicate that they are contemporary or that the field boundary utilised the defences of the enclosure when they were still upstanding. A further length of ditch (6) also appears to be aligned with this phase. A separate phase of boundaries (8, 9 & 10) run at an angle to the present field system and probably represent fields predating estate improvements. A third phase of boundaries 11, 12 and 13 were subdivisions of the present fields that survived into the 20th century. Several other anomalies (14-17) aligned to these are probably contemporary agricultural features.

4.5.3 Soils (Fig. 22)

A total of 21 pits were excavated of which four (Pits 12, 14, 15 and 16) lay within the area of the enclosure. The topsoil in the southern part of the area was dark brown sandy silt with variable amounts of gravel. The topsoil in the northern part of the area, including that over the enclosure, was a red-brown gravelly loam. This difference may be because the northern area has been more heavily cultivated, incorporating more subsoil or that the subsoil material derived from spread of bank material from the former enclosure.

The depth of topsoil over the field is fairly even, between 0.30 to 0.40m. The deepest soil was in Pit 11, on the slope down to the valley at the west. This was not bottomed at -0.71m, probably because of colluvial build-up on the slope, but possibly because of the presence of an archaeological feature.

The subsoil is mainly fluvio-glacial yellow-brown sandy silt with occasional small stones, but some areas at the south have a large proportion of fine gravel.

Pits 1, 4, 8, 9 and 14 included some angular heat-fractured stones, probably detritus from domestic activity contemporary with the enclosure, although only Pit 14 was actually within the enclosure.

Pits 12, 14, 15 and 16 lay within the area of the enclosure. Pit 12 exposed a possible archaeological feature at its south side. The topsoil in Pit 15 was deeper than average and was cut into the terrace at the east side of the enclosure.

The earthwork has been almost completely levelled by cultivation and the depth of the topsoil suggests that any future normal ploughing would not reduce it much further. However, on this type of soft subsoil, deep ploughing is often used to improve the land for arable crops and this would be likely to totally remove any remaining internal features such as the post-holes and ditches of roundhouses.

Table 5 Pont Rhyd Hir, Llannor, Soil Test Pit Survey

Pit No.	***Depth***	***Slope***	***Topsoil description***	***Subsoil description***	***Comment***
1	0.35	Slight	Dark brown sandy silt with occasional small sub-angular stones	Yellow-brown sandy silt with occasional small stones	Some burnt stone
2	0.38	Level	Dark brown sandy silt with occasional small sub-angular stones and gravel, 10-25mm dia.	Light brown sandy silt with *c*. 50% small gravel	
3	0.35	Level	As 1	As 1	
4	0.56	Level	As 1	As 1	Some burnt stone. Possible ditch?
5	0.36	Level	As 1	As 1	
6	0.31	Slight	As 1	As 1	
7	0.32	Level	As 2	As 2	
8	0.36	Level	As 1	As 1	Includes some burnt stone
9	0.32	Slight	As 1	As 1	Includes some burnt stone
10	0.36	Level	As 2	As 2	
11	0.71	Medium	As 2	As 2	Changes to red-brown gravelly silt at -0.50m – natural or feature?
12	0.56	Slight	Red-brown gravelly loam	As 2 on north side. At south side is deeper - possible archaeol. feature	
13	0.35	Level	As 12	As 2	
14	0.37	Slight	As 12	*c*. 90% small gravel in buff silt	Includes some burnt stone
15	0.52	Level	As 12	As 2	
16	0.39	Slight	As 12	As 1	
17	0.38	Level	As 12	As 1	
18	0.35	Medium	As 12	As 14	
19	0.31	Level	As 12	As 1	
20	0.28	Slight	As 12	As 1	
21	0.43	Level	As 12	As 1	

4.5.4 Discussion

The geophysical survey produced fairly clear results and demonstrated that much of the complex cropmark consists of several overlapping phases of field boundaries post-dating the enclosure. The presence of a sub-rectangular enclosure defended by a ditch and earth bank was confirmed. A second ditch appears to run along the inside of the bank. Fire cracked stones recovered from the test pits indicate that there had been domestic activity in the area that would probably have been associated with the enclosure. The interior of the enclosure however produced very similar geophysical results to those in the rest of the field suggesting that occupation horizons may have been truncated and mixed with the surrounding soil although survival of the slight earthwork would suggest that their should be survival of some internal features. A possibly contemporary larger enclosure or field adjoins the north western side of the site. A small group of pits were visible on both the aerial photograph and the geophysical survey results towards the east of the survey area. A small round barrow may also be associated with these.

4.5.5 Conclusions

An unusually shaped enclosure of a circle with a flattened, almost rectangular extension and internally comprises about 0.16ha. Its very distinctive shape can immediately be paralleled at the well-preserved earthworks of Caer Leb, Brynsiencyn, Anglesey, where the defences were also bivallate, although more substantial than at Pont Rhyd Hir. There the northern, square part of the enclosure had a raised area and the same may have been the case at Pont Rhyd Hir although that part is so comprehensively affected by later features that no details of the original settlement are visible. Caer Leb was partially excavated in the 19th century and produced remain of rectangular and circular buildings as well as pottery of the 2nd to 4th centuries AD, but a pre-Roman origin is quite likely. Its shape is difficult to explain, but it may be no more than one more variant on the many forms of Late Iron Age settlement known in the north-west, which include sub-circular, rectangular and polygonal shapes. However, it is certainly an oddity in Llŷn where curvilinear enclosed settlements are usual, as with that at King George's Field just to the east, and it may be that Pont Rhyd Hir was a settlement that was only established in the Roman period.

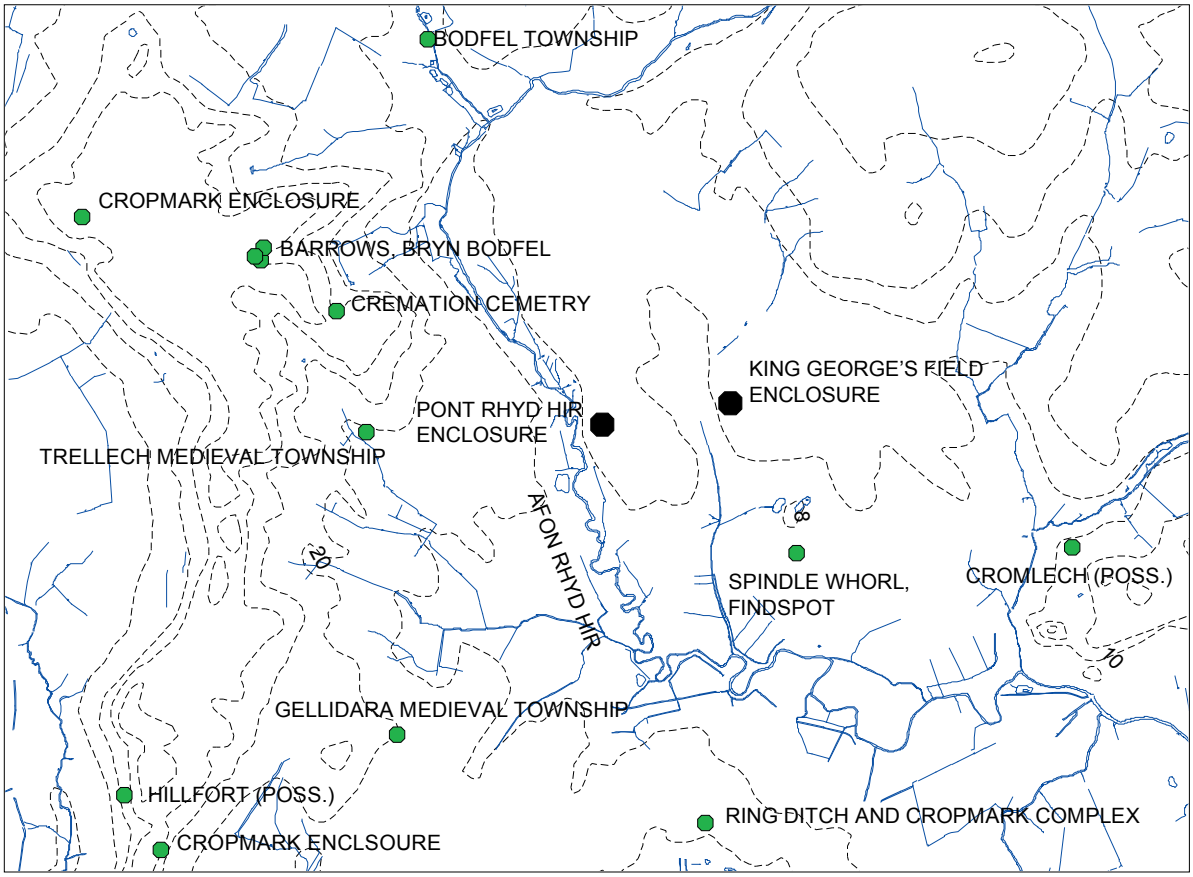


Fig. 18 Pont Rhyd Hir and King George's Field enclosures: Topographic location

Plate 8 Pont Rhyd Hir cropmark
Photograph by Toby Driver 2006. Copyright RCAHMW (AP 2006 4136)

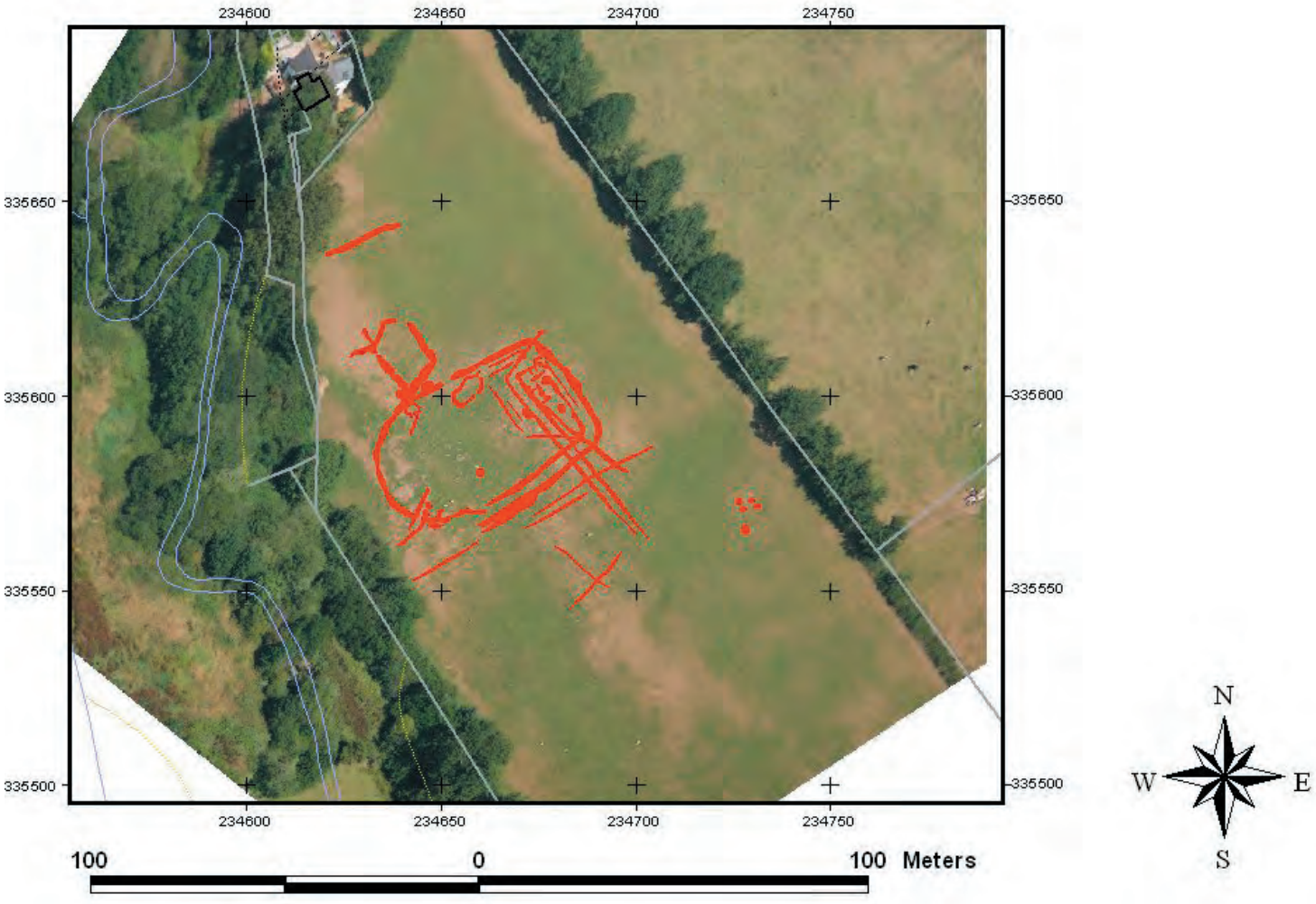


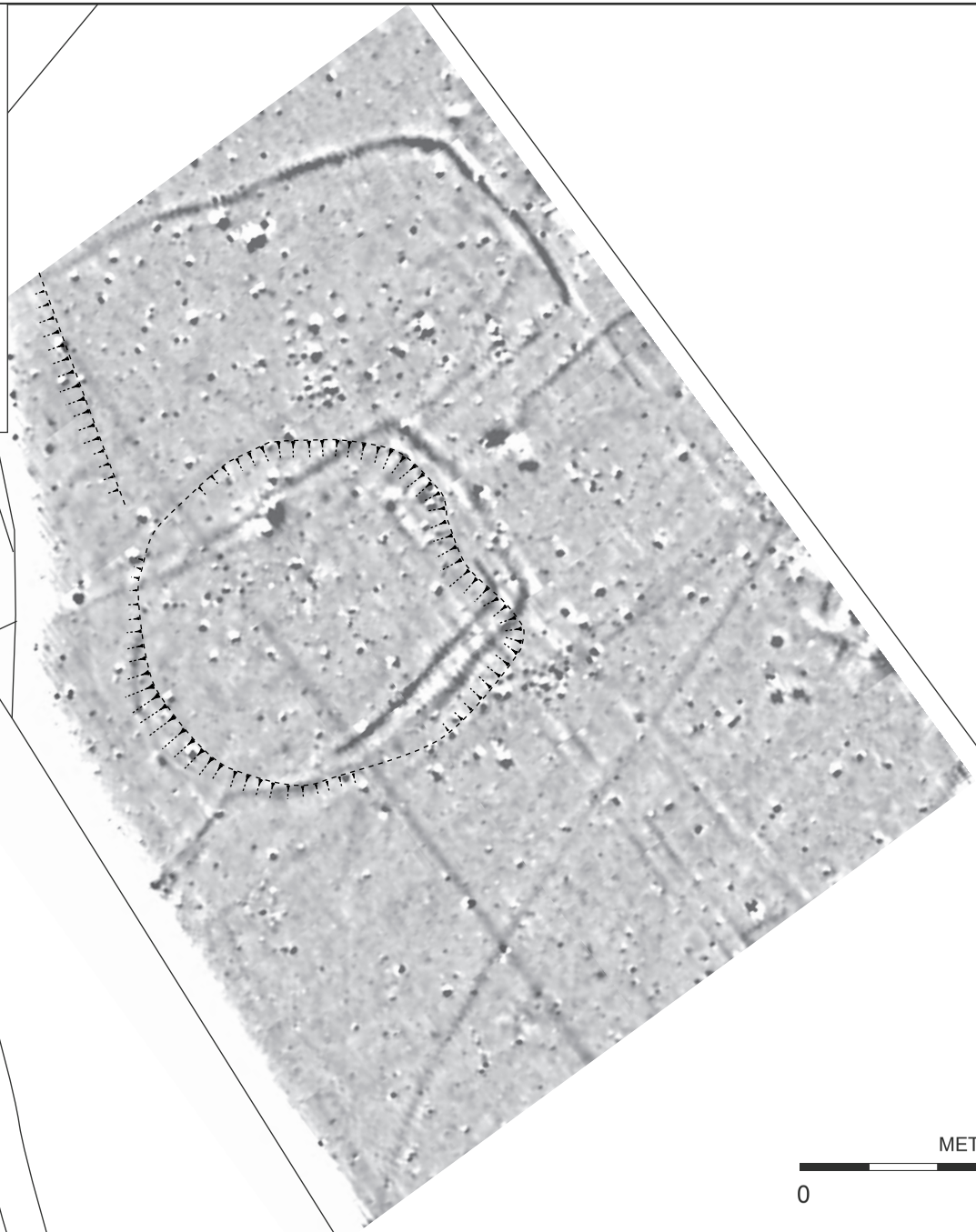
Plate 9 Pont Rhyd Hir rectified image with interpretation
(NPRN 405344 copyright RCAHMW)

Fig. 19 Pont Rhyd Hir survey

Earthwork and gradiometer grey-scale plot

Data clipped to +-15nT

scale: 1:1000



METRES

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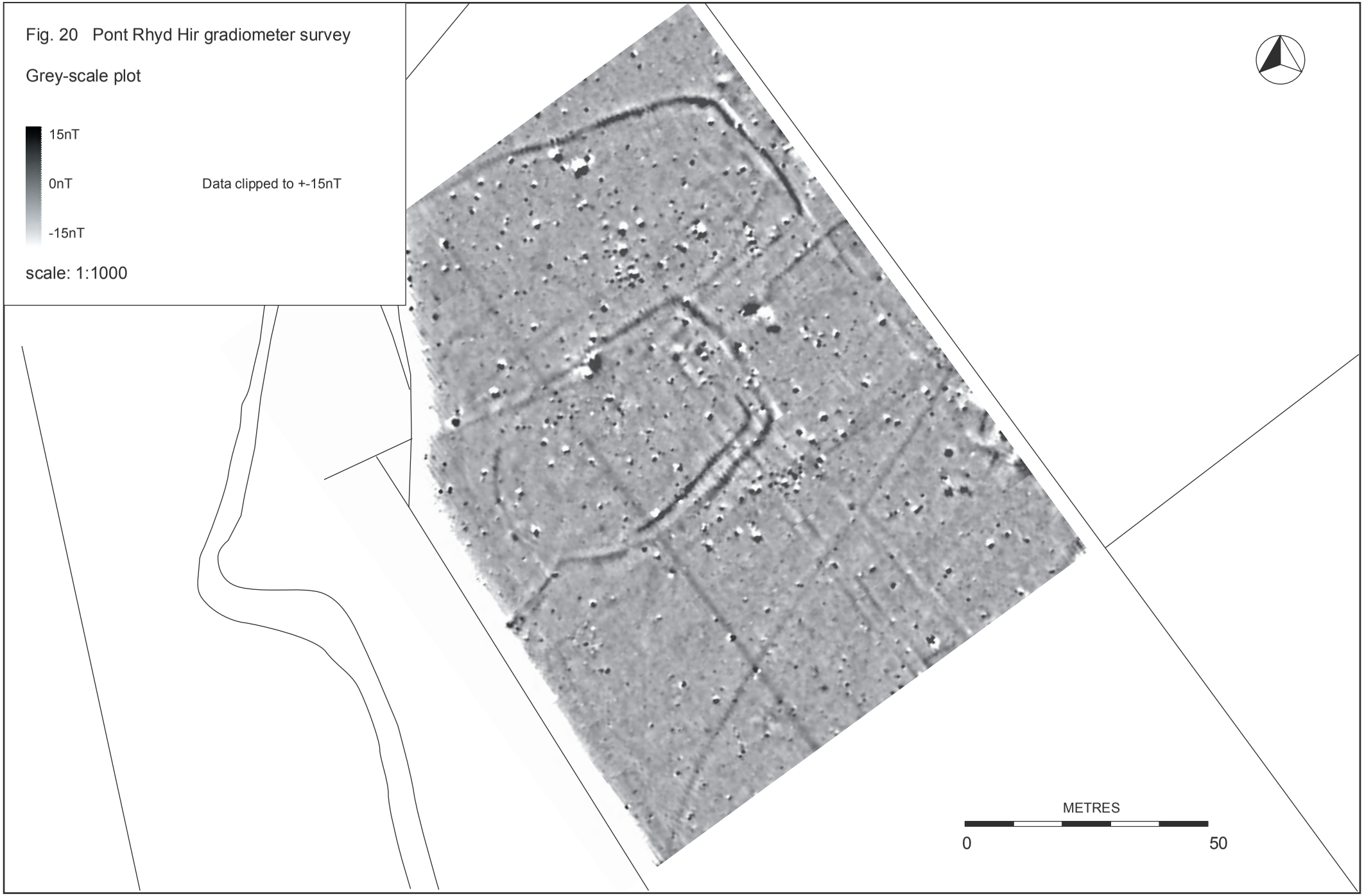


Fig. 20 Pont Rhyd Hir gradiometer survey
Grey-scale plot
15nT
0nT
-15nT
Data clipped to +-15nT
scale: 1:1000
METRES
0
50

Fig. 21 Pont Rhyd Hir gradiometer survey

Interpretation

scale: 1:1000

Fig. 22 Pont Rhyd Hir, Llannor: Location of the soil test pits in relation to the geophysical survey

4.6. CAE NEWYDD MYNACHDY, BOTWNNOG

NGR: SH22593178

4.6.1 Description and Location (Fig. 23)

Cropmarks of one half of a univallate, circular enclosure lie at 125m OD on the top of a slight rounded hill (Plates 10 and 11), the other half of the enclosure is now occupied by the present farmhouse and outbuildings. The hill forms a slight, south-facing promontory projecting from higher land to the north and overlooks undulating land and the slight valley of a spring-fed tributary of the Afon Soch to the south.

The field appears to have been cultivated over a long period. In 1889 the area was sub-divided into many small sub-rectangular fields representing a 19th century re-organisation of the landscape, as indicated by the name of the farm itself (trans. "New Field"). The farm and the hill to the east have the name Mynachdy (Monastic) attached. Much off the land in this area once belonged to Cymer Abbey and it is likely that there were Medieval strip fields here or close by.

4.6.2 Geophysical Survey Results (Figs 24 and 25)

Introduction

An area of 40m x 80m was surveyed at 0.25m x 0.5m resolution. The site lies in level fields and survey conditions were good. There was however some magnetic interference from the farm buildings.

Results

Parts of the survey were dominated by very strong anomalies that are a typical indication of igneous bedrock close to the surface (1 and 2). These produced responses of 70 to 100 nT thus masking archaeological responses (typically less than 15 nT) in these areas. The ditch defining the circular enclosure produced a strong anomaly indicating a 3m wide ditch. The projected diameter of the enclosure appears to be about 50m. A break in the ditch on the southern side probably indicates a narrow entrance. Much of the interior of the enclosure was masked by geological and ferrous (5) responses but a discrete circular area of magnetic enhancement (6) could indicate the remains of a round house with a diameter of about 8m. A recently removed field-boundary (7) runs across the enclosure.

4.6.3 Soils (Fig. 26)

The area surveyed was relatively small and only 8 soil pits were excavated. These showed a normal depth of plough soil of around 0.30m except in one pit at the north-east which coincided with a slight plough headland at the side of the farm track.

The topsoil was well-mixed loose, dark brown silt. The subsoil was variable suggesting bands of decayed shale bedrock at the south-west in pits 1, 2 and 3. The other pits had a subsoil of buff-orange or buff-brown silt. Only one of the pits, Pit 7 lay within the area of the enclosure. In this pit, at the base of the plough soil, at -0.27m depth was a layer of silty loam with occasional stones, including burnt stones. This was still not bottomed at the final depth of -0.46m. The pit coincided with the site of a possible roundhouse identified in the geophysical survey (Feature 6) and the burnt stones are probably domestic debris from the house, either in a pit, post-hole or ditch. The house lies close to the entrance to the farmyard and buildings, where there is already a heap of scrap building materials and it is very vulnerable to disturbance by earthmoving, vehicles or farm building construction.

Table 6 Cae Newydd Mynachdy, Soil Test Pit Survey

Pit No.	*Depth*	*Slope*	*Topsoil description*	*Subsoil description*	*Comment*
1	0.30	Slight	Dark brown silt	Disaggregated stone with slight matrix of orange silt	
2	0.30	Slight	As 1	As 1	
3	0.32	Slight	As 1 but slightly lighter brown	Buff-orange silt with scattered small angular stones up to 50mm long	
4	0.33	Slight	As 3	Buff-brown clayey silt	
5	0.27	Slight	As 3	As 1 but in a mid-brown silt matrix	Possibly archaeological. Ditch fill?
6	0.50	Slight	As 3	As 4	
7	0.27	Slight	As 1	Not bottomed at -0.46	At the base of the plough soil is a layer of silty loam with occasional stones including burnt stone fragments. Possibly an archaeological feature
8	0.34	Slight	As 3	As 3	

4.6.4 Discussion

The geophysical survey results were somewhat compromised by the presence of shale bedrock close to the surface that produced very strong magnetic responses. The enclosure ditch produced a clear anomaly and was presumably rock cut at the north. The somewhat tentative interpretation of an area of geophysical noise as the remains of a roundhouse was supported by the results from the test pits.

4.6.5 Conclusions

This is a small univallate enclosure of about 0.13ha. It has a relatively slight ditch, a narrow simple entrance and a possibly single approximately central roundhouse. The slight ditch and central position of the roundhouse suggest this is a non-defensive early settlement enclosure of concentric circle type dating to the first half of the first millennium BC or earlier. As such it is valuable and it would be worthwhile to protect or excavate the single roundhouse because of its vulnerability.

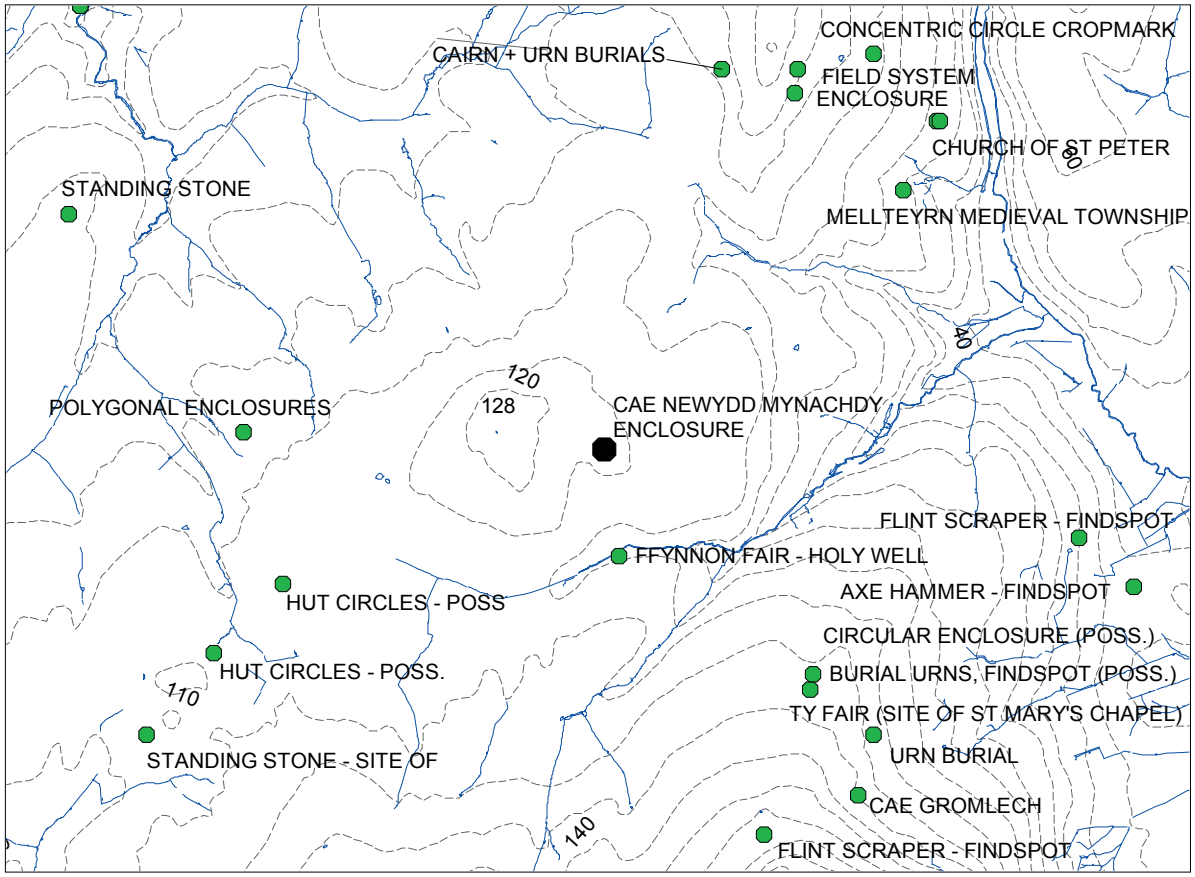


Fig. 23 Cae Newydd Mynachdy enclosure: Topographic location

Plate 10 Cae Newydd Mynachdy cropmark
Photograph by Toby Driver 2006. Copyright RCAHMW (AP 2006 3533)

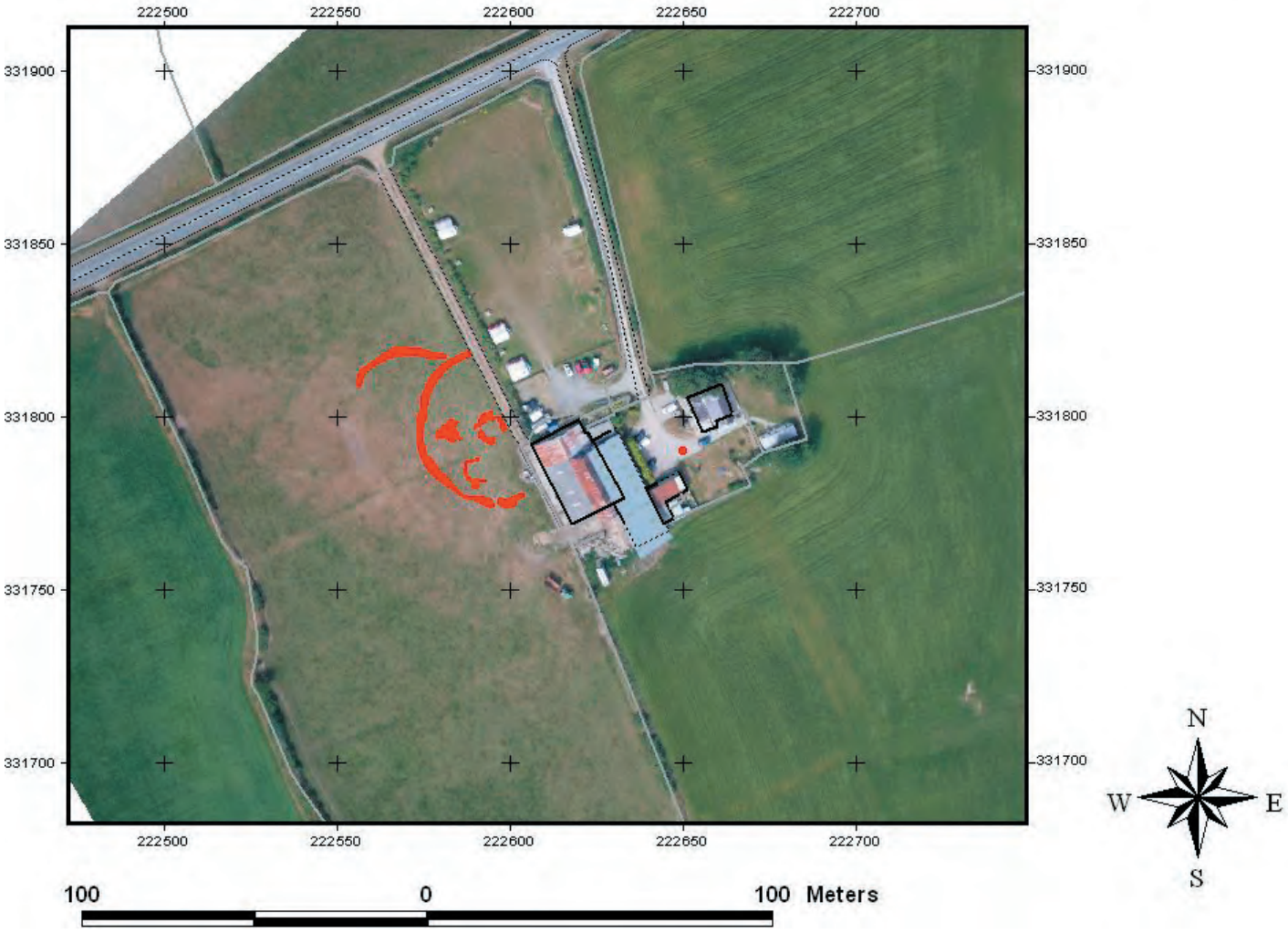


Plate 11 Cae Newydd Mynachdy, rectified image with interpretation
(NPRN 405362 copyright RCAHMW)

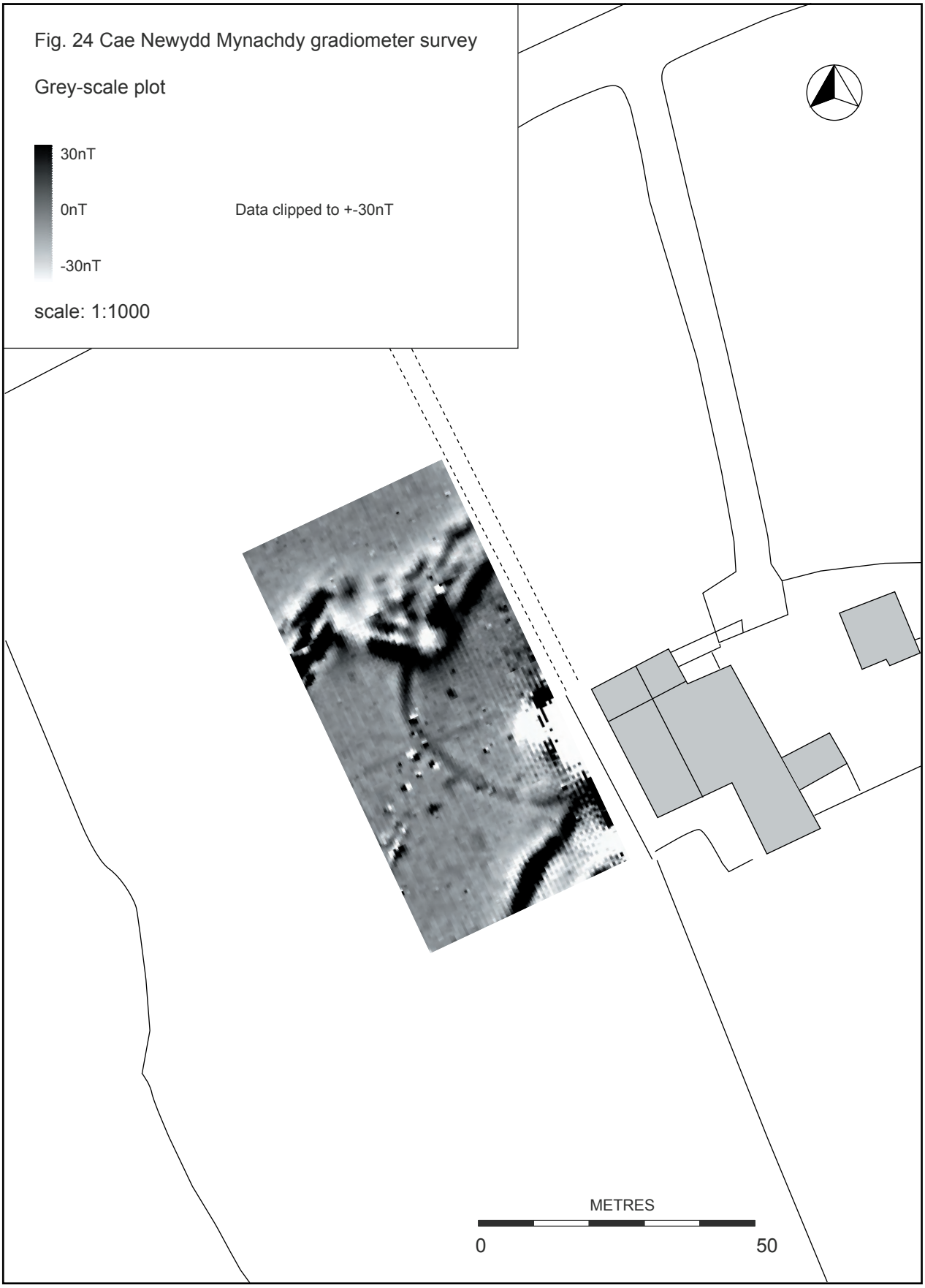


Fig. 24 Cae Newydd Mynachdy gradiometer survey
Grey-scale plot
30nT
0nT
-30nT
Data clipped to +-30nT
scale: 1:1000
METRES
0
50


Fig. 25 Cae Newydd Mynachdy gradiometer survey
Interpretation
scale: 1:1000
1
6
5
7
3
4
2
METRES
0
50

Fig. 26 Cae Newydd Mynachdy, Botwnnog: Location of the soil test pits in relation to the geophysical survey

4.7 YNYS BACH, LLANERCHYMEDD

NGR: SH44588256

4.7.1 Description and Location (Fig. 27)

The site was discovered by J. Rowlands and D. Roberts of Pixaerial during aerial reconnaissance in low incident light (Plate 12). They also carried out a close-contour survey of the site (Fig. 28). It is visible as a low sub-circular earthwork cut by a modern hedge-bank. A less well-defined series of banks suggested that it stands within a larger rectangular enclosure. The site lies at 75m OD within an almost level area of improved grass pasture that was probably arable in the past and has been ploughed over a long period. The area of the crop mark itself is slightly raised because it appears to be a ploughed-down bank with a ditch around it. A wet hollow in the edge of the next field immediately adjoining the earthwork to the east appears to be a remnant of the enclosure ditch.

The fields here are all large and rectangular of estate improvement type. There is an existing large circular enclosure PRN 3584, 1km to the north possibly associated with nearby finds of stone mortars and a rotary quern. The enclosure is of unknown date but it has been suggested that it might be an Early Medieval burial or church site and was evaluated by geophysical survey in 2001 but with no results (GAT Rep. No. 461). There is also a standing stone, Llech Golman, PRN 2201, 1km to the north-east.

4.7.2. Geophysical Survey Results (Fig. 29 and 30)

Introduction

This survey aimed to examine the sub-circular earthwork along with the possible larger rectangular enclosure. An area of 60m x 45m was surveyed at 0.5m x 0.25m resolution and the survey area was expanded to 140m x 65m at a resolution of 1.0m x 0.5m. Survey conditions were good although there was some interference from magnetic geology.

Results

The earthwork produced a series of geophysical anomalies masked at the north by responses from very magnetic bedrock (1). The defences appear to consist of a 3m wide ditch (2) and a 4m wide bank (3) producing an irregular enclosure with straight sides and curved corners with dimensions of about 52m x 53m. No entrance was detected in the surveyed area, suggesting that it is on the eastern side. The bank is visible as a magnetically quiet area on the inside of the ditch which contrasts strongly with the noisy interior of the enclosure. This is presumably due to magnetic enhancement due to domestic activity. Two probable roundhouses are visible, one with a diameter of 11m in the north western corner (4) and a second on the eastern side with a diameter of 7m (5).

A double linear anomaly (6) on the northern side of the field probably corresponds to the ditches of an earlier field system. Less well-defined linear anomalies 7 and 8 are probably of recent agricultural origin and two areas of noise, 9 and 10 probably indicate natural variations in the subsoil. There was nothing to suggest the presence of a larger rectangular enclosure and the results suggest that the earthworks consisted of post medieval field boundaries (including anomaly 6) and other agricultural features.

4.7.3 Soils (Fig. 31)

The topsoil in the field generally is quite shallow, between 0.22-0.32m deep, mainly of grey-brown silty loam with occasional small stones. The subsoil is mainly of orange-brown silt with occasional small stones. The type of topsoil and subsoil makes it friable and free-draining land and would have been attractive for early agriculture.

Two pits, Pits 8 and 12 were situated within the area of the crop mark.

Pit 8 appeared to be over the probable ploughed-down enclosure bank. This showed a similar depth of plough soil to -0.24m, below which was a layer of stones, the probable make-up of the bank. Below the probable bank from -0.38 to -0.52m was a layer of dark grey silt, possibly a buried soil.

Pit 12 fell inside the enclosure and had deeper topsoil to -0.43m, which became darker and more compact lower down, possibly representing a buried occupation horizon.

Table 7 Ynys Bach, Llanerchymedd Soil Test Pit Survey

Pit No.	***Depth***	***Slope***	***Topsoil description***	***Subsoil description***	***Comment***
1	0.43	Slight	Grey-brown silty loam with occasional small sub-angular stones up to 50mm L	Orange-brown silt with occasional small stones	Topsoil becomes slightly greyer lower down
2	0.32	Ditto	Ditto	Buff-brown silt with 20% small stones	
3	0.24	Ditto	Ditto	Ditto	
4	0.46	Ditto	Ditto	Ditto	
5	0.49	Ditto	Ditto	Orange-brown silt with occasional small stones and flecks of iron pan	
6	0.29	Ditto	Ditto	Ditto	
7	0.22	Ditto	Ditto	Ditto	
8	0.52	Ditto	Ditto to -0.24	Grey-brown clayey silt with iron pan	0.24-0.38 Stony layer –stones sub-angular and sub-rounded up to 200mm L. Possible bank. 0.38-0.52 Dark grey clayey silt. Buried soil or gleyed subsoil?
9	0.40	Ditto	Ditto	Orange-brown silt with occasional small stones	
10	0.23	Ditto	Ditto	Orange-brown silt with occasional small stones	In dip of modern track across field
11	0.23	Ditto	Ditto	Orange-brown silt with occasional small stones	
12	0.43	Ditto	Ditto	Orange-brown silt with occasional small stones	Just inside bank. Lower topsoil darker and more compact – possibly a buried archaeol. horizon.
13	0.22	Ditto	Ditto	Orange-brown silt with occasional small stones	

4.7.4 Discussion

The geophysical survey produced fairly clear results and, when viewed with the test pit data, indicates that the site is a well preserved prehistoric settlement. There are clear indications of occupation within the enclosure including at least two roundhouses. There was however nothing to suggest the presence of a larger rectangular enclosure. The site survives as a raised earthwork in an area of intensively farmed land and would be particularly vulnerable to plough damage and agricultural clearance.

4.7.5 Conclusions

This is a small compact sub-ovoid or trapezoidal enclosure of about 0.11ha internally. Despite its small size and its non-defensive location it has substantial bank and ditch. It is characterised by the compact nature of the settlement with at least one house built into or closely adjoining the enclosure bank. This lay-out is typical of the class of 'courtyard house' settlements where the houses cluster around a central space, rather than being set centrally within the enclosure, detached from the enclosure bank. This style of settlement unit developed into what was just a series of adjoining or conjoined rooms around a yard within a yard set within a small enclosure. There are about 50 of these in the north-west and they are very similar in style to those known as 'courtyard' houses of the Romano-British period in Cornwall. Several in north-west Wales have been shown to be occupied in the Roman period but it has been shown that in some cases they were constructed over earlier timber roundhouses (Kelly 1988, 145-7) and the same could be the case at Ynys Bach.

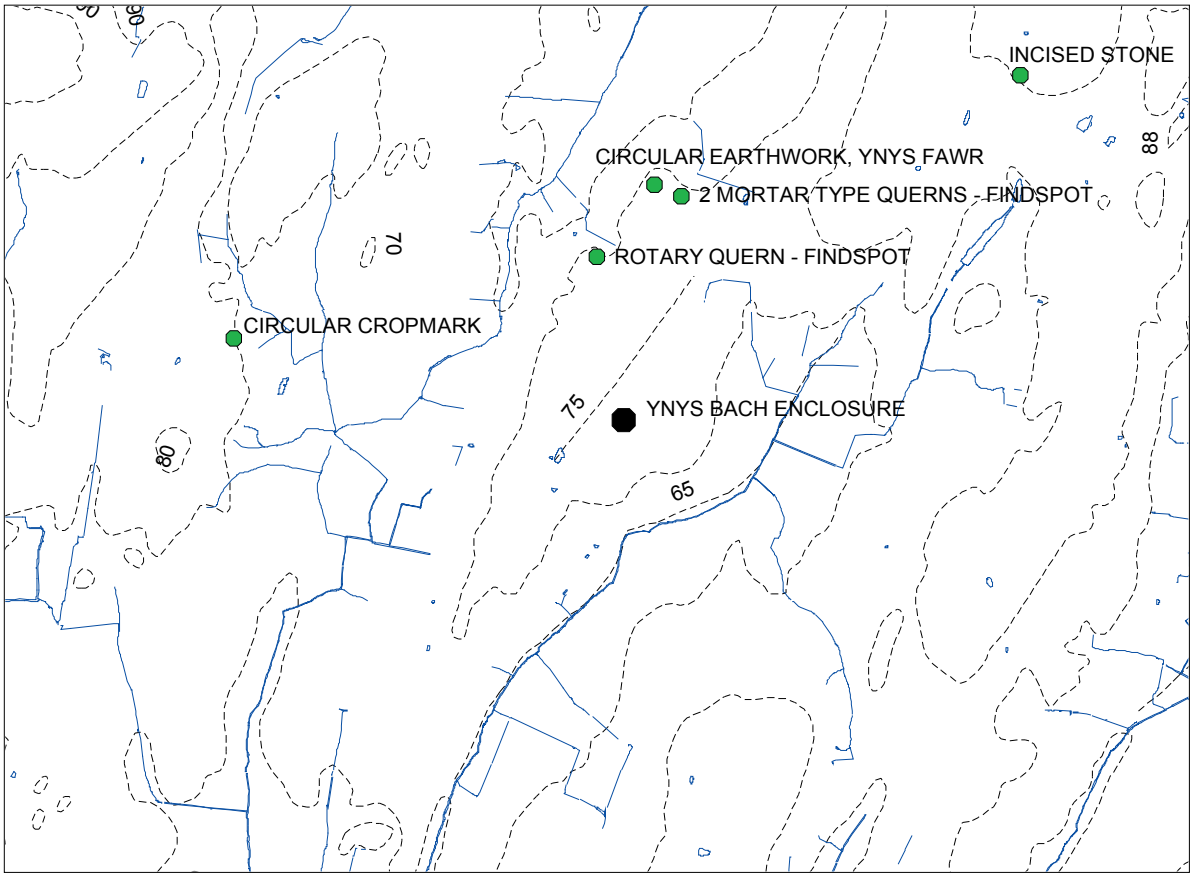


Fig. 27 Ynys Bach enclosure, Llanerchymedd, Anglesey: Topographic location

Plate 12 Ynys Bach cropmark

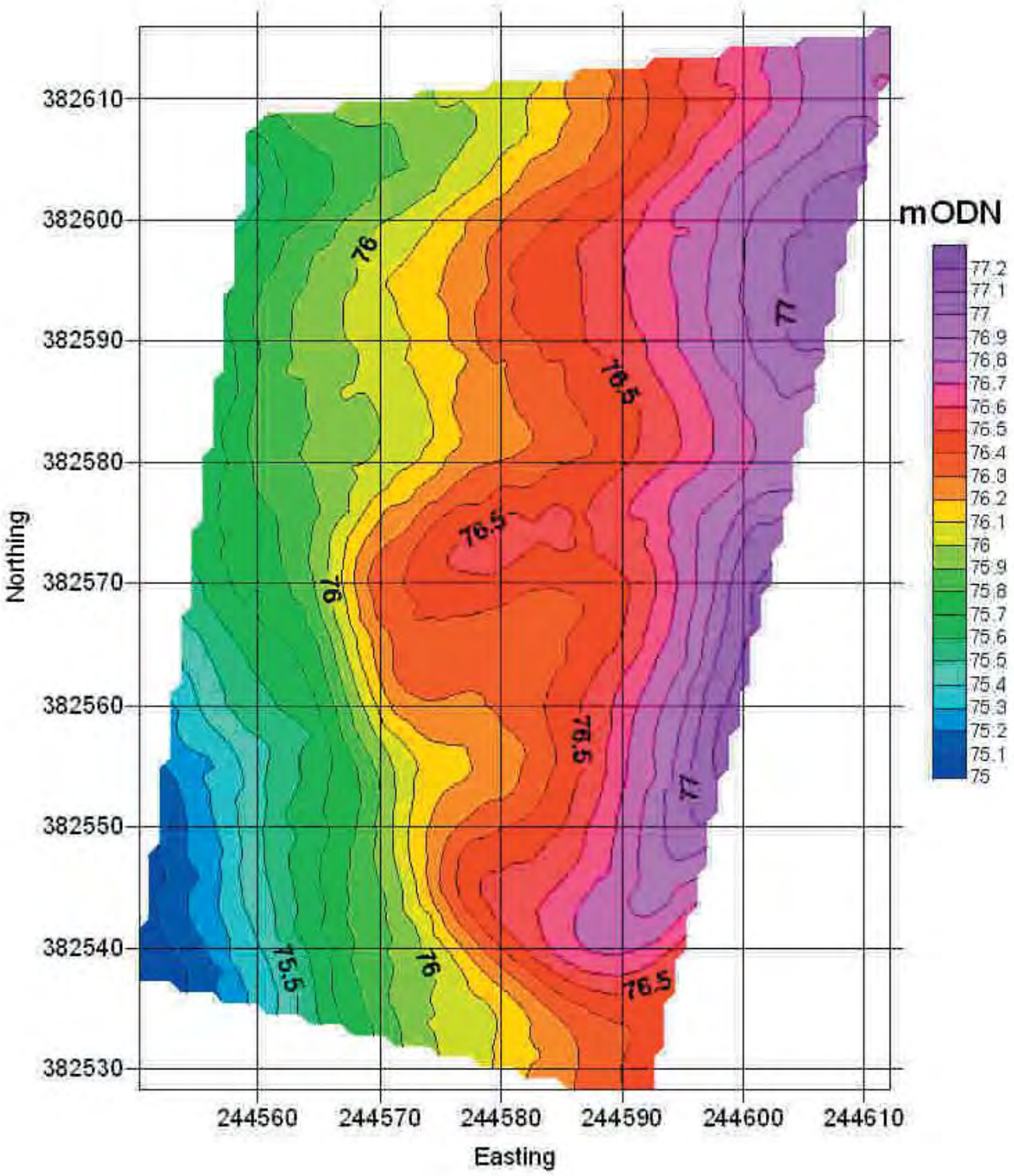
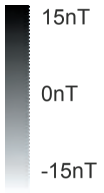


Fig. 28 Ynys Bach contour survey (J. Rowlands and D. Roberts)

Fig. 29 Ynys Bach gradiometer survey

Grey-scale plot



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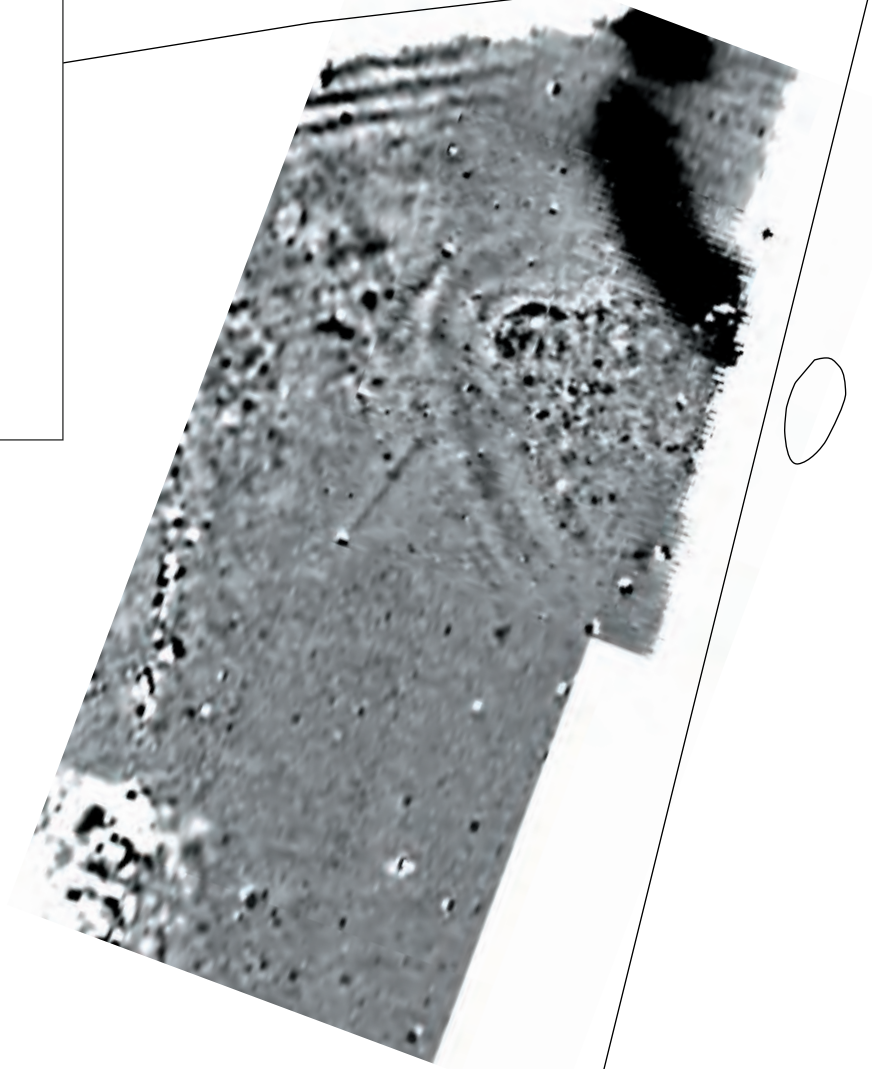

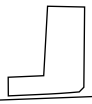

Fig. 30 Ynys Bach gradiometer survey

Interpretation

scale: 1:1000

METRES

0 50

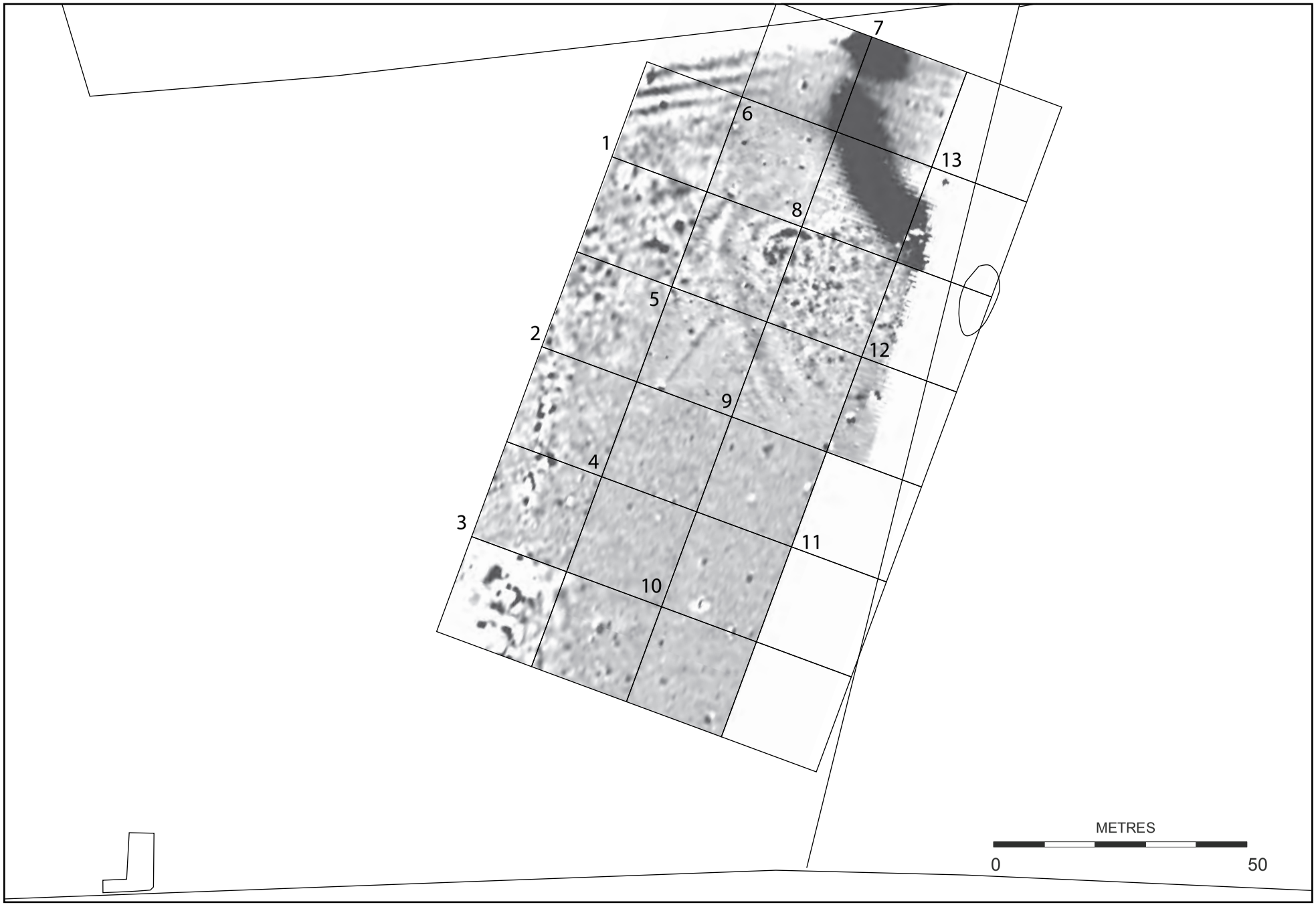

Fig. 31 Ynys Bach, Llanechymedd, Anglesey: Location of the soil test pits in relation to the geophysical survey

4.8 KING GEORGE'S FIELD, EFAILNEWYDD SH35183584

4.8.1 Description and Location (Fig. 18)

A very clear sub-circular cropmark was discovered by RCAHMW in playing fields at Efailnewydd in 2006 (Plates 13 and 14). A later photograph in low incident light revealed a low circular earthwork in a slightly different position. This was subsequently found to be the remains of a circular copse of trees shown on late 19th century / early 20th century OS maps.

The cropmark enclosure lies at 15m OD on an almost level area east of the slight valley of the Afon Rhyd Hir and only 500m east of the enclosure of Pont Rhyd Hir (above). There is a very sight slope to the west.

The enclosure lies within what is now a public playing field but which, in 1889, was a long narrow rectangular field, sub-divided into three smaller fields. The remaining field boundaries, at the north-west and south-east are banks. The fields around Efailnewydd are mainly of similar small fields in strip-like blocks. These are probably smallholders plots created as part of 19th century estate re-organisation, rather than remnants of Medieval strip fields since Efailnewydd was not a Medieval settlement.

4.8.2 Geophysical Survey Results (Figs 32 and 33)

Introduction

Survey conditions were generally ideal. The field was flat with no obstructions although iron goal-posts on the edge of the survey area produced very strong magnetic anomalies.

Results

The ditch of the enclosure produced a clear magnetic anomaly (1). The enclosure was found to be roughly circular with a slightly flattened eastern side and with dimensions of 34m x 38m. The ditch appears to be 2.5m to 3m wide with a 4.5m wide entrance in the western side. The interior was partially masked by responses from later features and no internal features were detected.

A second circular anomaly (2) was detected and this corresponds to the circular copse of trees shown on the late 19th century OS maps. A linear anomaly (3) is probably a former field boundary. The rest of the anomalies are aligned to the playing field and are probably recent. The linear features 4 to 8 are earlier drains or former pitches, three patches of noise 7 to 11 mark the site of bonfires, 12 and 13 are anomalies produced by goal posts and the strong anomaly 14 is the result of a buried pipe or cable.

4.8.3 Soils (Fig. 34)

Only three test pits were excavated at the south side of the area because damage to the football pitch had to be minimized. These all lay outside the area of the enclosure.

The topsoil was deepest in Pits 2 and 3 but these lay on the line of a slight earthwork terrace resulting from levelling up of the football pitch. The topsoil was medium brown silty loam with scattered pebbles, a former plough soil. The subsoil was yellow-brown stony silt, a fluvio-glacial material similar to that at the Pont Rhyd Hir enclosure.

Pit 3 was not bottomed at a depth of -0.55m as it changed to mid-grey stony silt at -0.40m. This was almost certainly an archaeological feature seen as a long, gently curving linear anomaly in the geophysical survey, probably a Post-medieval cultivation feature.

The soil pits show that there is a relatively deep soil cover over the area of the enclosure and although it has been heavily eroded by cultivation in the past it is now protected as a public space. However, the geophysical survey showed that a modern pipe or cable trench crosses the enclosure and the excavation for this would have been monitored if the enclosure had been recorded on the HER at the time it was laid.

Table 8 King George's Field, Efailnewydd, Soil Test Pit Survey

Pit No.	*Depth*	*Slope*	*Topsoil description*	*Subsoil description*	*Comment*
1	0.46	Slight	Mid-brown silty loam with scattered pebbles up to 100mm L	Yellow-brown stony silt	
2	0.51	Slight	As 1	As 1	
3	0.55	Slight	As 1	As 1	From -0.40m is mid-grey stony silty loam. Not bottomed. Possible archaeological feature.

4.8.4 Assessment excavation

Introduction

An assessment excavation was carried out at King Georges Field in order to sample the defences of the prehistoric enclosure. Outreach activities were included in the programme of work. Guided tours and educational handouts were given to Pentreuchaf (Plate 15) and Rhyd y Clafdy schools and Jamie Davies, a year 11 student, from Ysgol Botwnnog Pwllheli worked as a short-term volunteer on the excavations. Guided tours were also given to local residents and community councillors. Thanks are due to Llannor Community Council, in particular Mr John Griffiths the council clerk, for permission to excavate.

Methods and Conditions

The excavation was carried out entirely by hand by the writers between 10th and 14th March 2008. The turf was carefully removed and reinstated in order to minimise damage and disruption to the playing field.

Results

A 5m x 2m trench was excavated across the defences ditch on the western side of the enclosure and just to the south of the entrance (Fig. 35 and Fig. 33 for location). The turf and topsoil (02) were removed by hand to a depth of 20cm revealing a firm orange brown silty loam (03) across the whole of the trench. The ditch was not visible at this level so it was presumed that this was a horizon of buried plough soil. The soil was removed revealing mid orange/brown silty gravel subsoil (01), the upper fills of the ditch (cut 17) and a narrow linear feature (cut 06).

The linear feature could be seen to cut the ditch fills. This was sectioned and was found to be a small, steep-sided and flat-bottomed slot 0.38m wide and 0.12m deep. No dating evidence was recovered from the feature.

A 1m wide section of the ditch was excavated (Fig. 36 and Plate 16). It was found to be 2.9m wide and 1.5m deep with somewhat uneven sides sloping at approximately 45 degrees to a wide base containing a 0.4m deep cleaning slot. The ditch was cut into very loose silty gravel natural subsoil containing numerous cobbles. The primary fill (12) of the ditch comprised stone-free gravel that had presumably washed in from the sides. The rest of the cleaning slot was filled with clean silty gravel containing round stones which had presumably also eroded from the sides of the ditch. The main body of the ditch was filled with two somewhat variable contexts of silty gravel (09 and 10). The lower (10) contained mid to fine gravel, the upper (09) coarse gravel. Both contained accumulations of cobbles and small boulders up to 50cm in diameter including two broken stones with surfaces worn flat from grinding. Only a few of these large stones are visible in the drawn section but a large number were recovered from the ditch. The lower of the two fills was somewhat asymmetrical suggesting that it had come from the inside of the enclosure. Neither context contained significant silting horizons and both were rather mixed, with stones having rolled towards the centre of the ditch. The fills appeared to be

a deliberate deposition as opposed to weathering. It therefore seems likely that the material from the digging of the ditch had been used to construct a rampart and the rampart was subsequently demolished and dumped in the ditch. The large stones do not appear to have been from the material excavated from the ditch suggesting that the rampart was stone-faced and that the facing was dumped in the ditch with the rampart core.

The upper fills of the ditch comprised a lens of clean silt (08) and a deposit of stone-free gravel (04) indicating a period of natural silting overlaid by a mixed context of silt (05) containing varying amounts of stone and occasional patches of gravel. About 50% of the stones were found to be fire-cracked. The upper fills of the ditch appear to represent silting and dumping of material during continued occupation of the site, after the removal of the defences.

The lower fills (9 to 12) were completely charcoal free and only the occasional very small fleck was discovered in the upper fills 04, 08 and 05. No finds apart from the two broken grinding stones were recovered from the ditch so no dating evidence was produced for any of the phases of use.

Finds (Plates 17 and 18)

Flint and chert

1. Backed knife of flint.
Thick tertiary blade flake with steep inverse backing on one side and casual retouch on the face of the other sharp edge. Probably earlier Neolithic. The facet edges are rounded suggesting that this had a very long period of surface exposure or movement in the plough soil. Light grey pebble flint. 40 x 23 x 6mm. Unstratified spoil-heap.

2. Waste flake of flint.
Secondary flake of mid-grey flint with pebble cortex. Unstratified topsoil.

3. Core fragment of chert.
Black pebble chert. Butt core remnant after flaking from several directions. Unstratified spoil-heap.

Stone

4. Pebble chopping tool.
Heavy, dense, fine-grained igneous stone, possibly dolerite. Burnt. A flattish oval pebble with an accidental or burnt fracture of one side and deliberate unifacial flaking around one broader end to create a quite sharp edge. Some smaller flakes from the opposite face are likely to be from use as a chopping tool. Undateable. As the stone was burnt and came from amongst a context with numerous burnt fractured stones that had been discarded it is possible that this piece had been collected by chance from elsewhere for heating purposes rather than actually being used as a tool at the settlement. Context 5, Upper ditch fill.

5. Saddle quern fragment.
Thick boulder fragment with one face well-worn from use. Igneous stone, possibly dolerite. It was quite a thick rounded boulder and would have had to have been set in a small pit to make it stable in use. Burnt and slightly cracked on the worn face. Clearly deliberately broken as it would have taken a good very heavy impact to split such a boulder. Remaining ground face 240mm x 190mm. Depth 205mm. Context 9, Middle ditch fill.

6. Saddle quern fragment.
As for No. 5, but slightly finer-grained stone. Also slightly burnt and broken. Remaining ground face 260mm x 190mm. Depth 165mm. Context 9, Middle ditch fill.

Burnt Stone

A small sample of burnt stones was retained. These had consisted of sub-angular or sub-rounded river cobbles from about 100mm to about 200mm long. The characteristic feature was that these were still quite large when discarded, i.e., they had not been reduced to small fragments and still seemed of a useable size. Some of the cobbles were even still whole. Whatever they were being used for in the

settlement it was different from that in most burnt mounds, where the discarded pieces are usually small, presumed to have been reduced to a size when they are no longer worth re-heating, or were the small residue from the bottom of a trough. Here, obviously there was no available water supply so use in a water-filled trough is unlikely. The burnt stone layer was also distinctively completely lacking in charcoal.

4.8.5 Discussion

The geophysical survey confirmed the presence of a ditched enclosure beneath the playing field and demonstrates that it has been cut by a modern pipe or cable trench and that parts of the interior have also been disturbed by the boundary and roots of a copse of trees. There was no geophysical evidence for the survival of internal features but the relatively deep soil cover suggests that there is the potential for some preservation of archaeological features within the enclosure.

The excavations confirmed the findings of the geophysical survey demonstrating that the defences of the enclosure consisted of a substantial ditch. It seems likely that the material excavated during the digging of the ditch was used to construct a rampart. This appears to have been stone-faced. The ditch was kept open for long enough to allow a cleaning slot to cut into the loose subsoil. The slot was allowed to silt up (this would have happened fairly quickly given the loose unstable gravel subsoil) and the rampart was demolished and dumped into the ditch. The lack of burnt material in the dumped material suggests that this was not carried out as part of an attack and slighting of the defences and the presence of the two broken grinding stones in the lower fills of the ditch implies that the removal of the rampart was carried out during the occupation of the enclosure. The large amounts of burnt stone in the upper fills of the ditch indicate the continued occupation of the site with the remaining hollow of the ditch, being allowed to fill with silt and discarded fire cracked stones.

4.8.6 Conclusions

This is a small sub-circular enclosure of *c*. 0.1ha. Despite its size, like Ynys Bach, it has a substantial ditch that indicates it was defensive. It has relatively wide entrance, in terms of the ditch causeway, but as with Bwlch y Ffordd Isa above, the gap through the bank was likely to be much narrower. The enclosure has been badly eroded by centuries of cultivation, so no features are visible. However, the excavation results show that it was a settlement enclosure, that it probably had a sizeable bank that was revetted by stone. It also showed that the settlement had more than one phase of use. The first was truncated by deliberate demolition of the bank and its deposition in the ditch, which remained as a slight hollow. Occupation continued however as considerable quantities of fractured burnt stone accumulated in the remains of the ditch. There was no direct dating evidence although it could be suggested that the settlement began as an enclosed site in the first millennium but was slighted and became an open settlement after the Roman conquest. A similar sequence was inferred at the defended hill-top settlement of Castell Odo, Aberdaron, Llŷn, where unfortunately dating evidence for this later phase was also absent.

Plate13 King George's Field cropmark
Photograph by Toby Driver 2006. Copyright RCAHMW (AP 2006 4138)

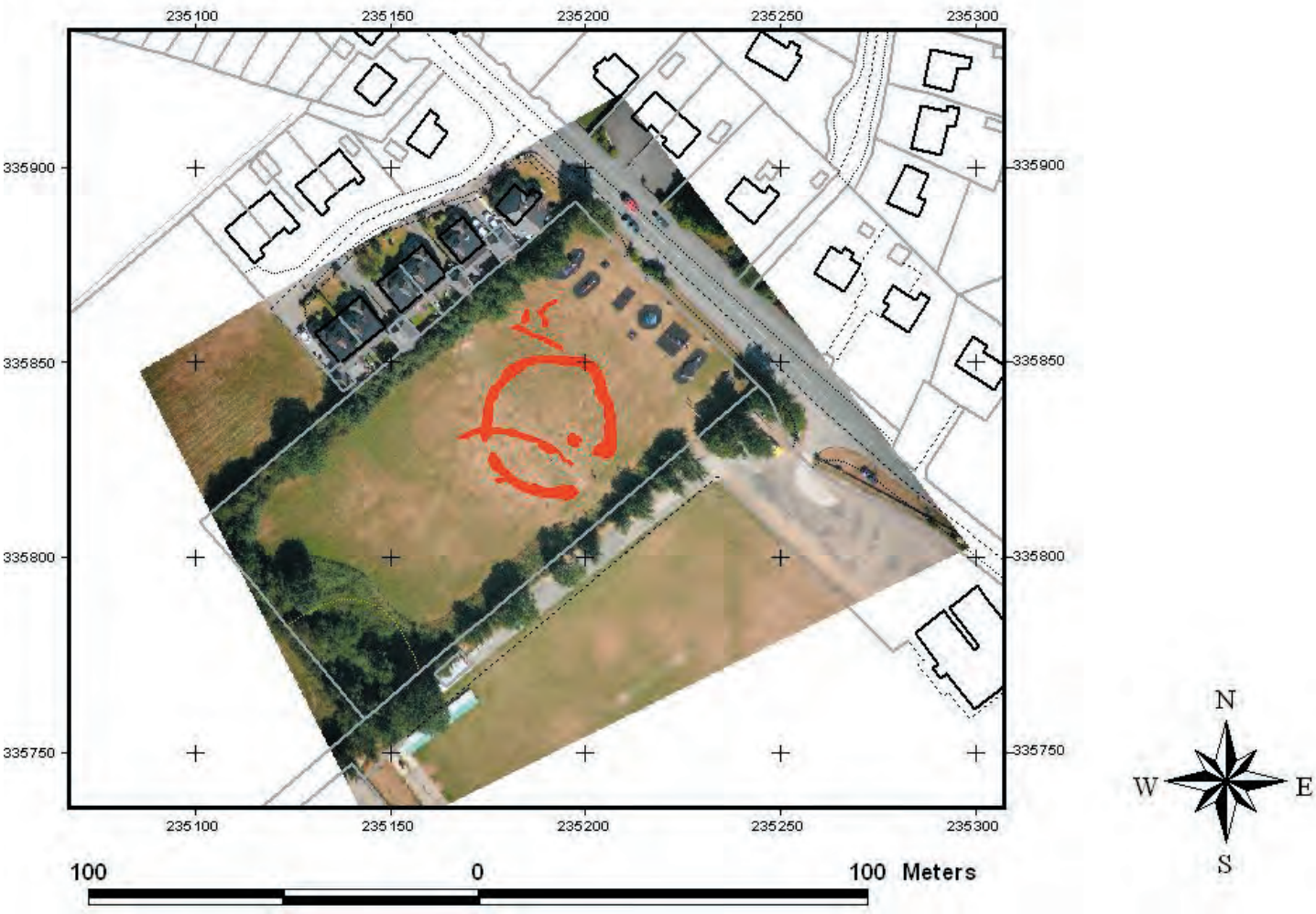

Plate 14 King George's Field rectified image with interpretation
(NPRN 404658 copyright RCAHMW)

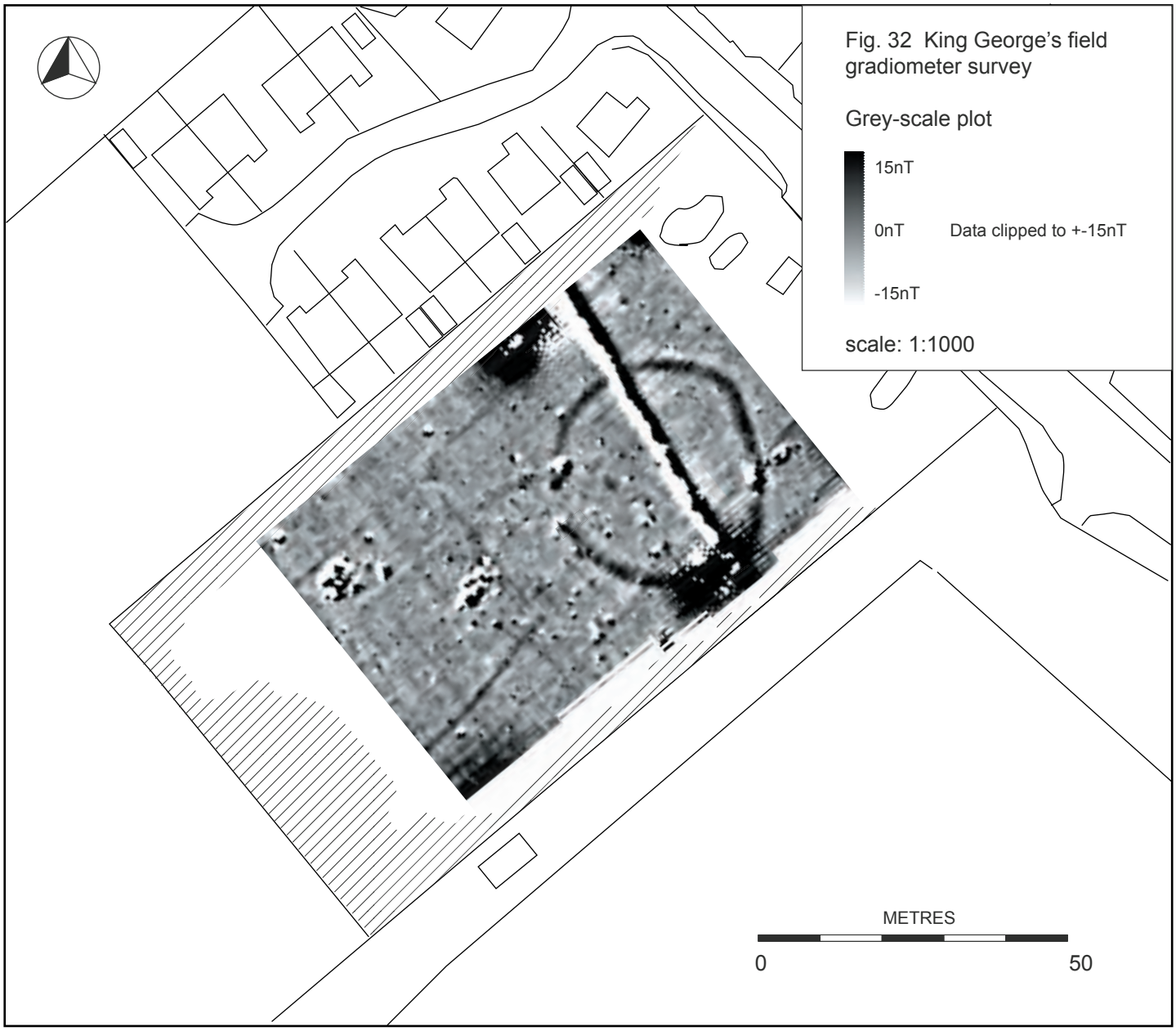
Fig. 32 King George's field gradiometer survey
Grey-scale plot
15nT
0nT
-15nT
Data clipped to +-15nT
scale: 1:1000
METRES
0
50

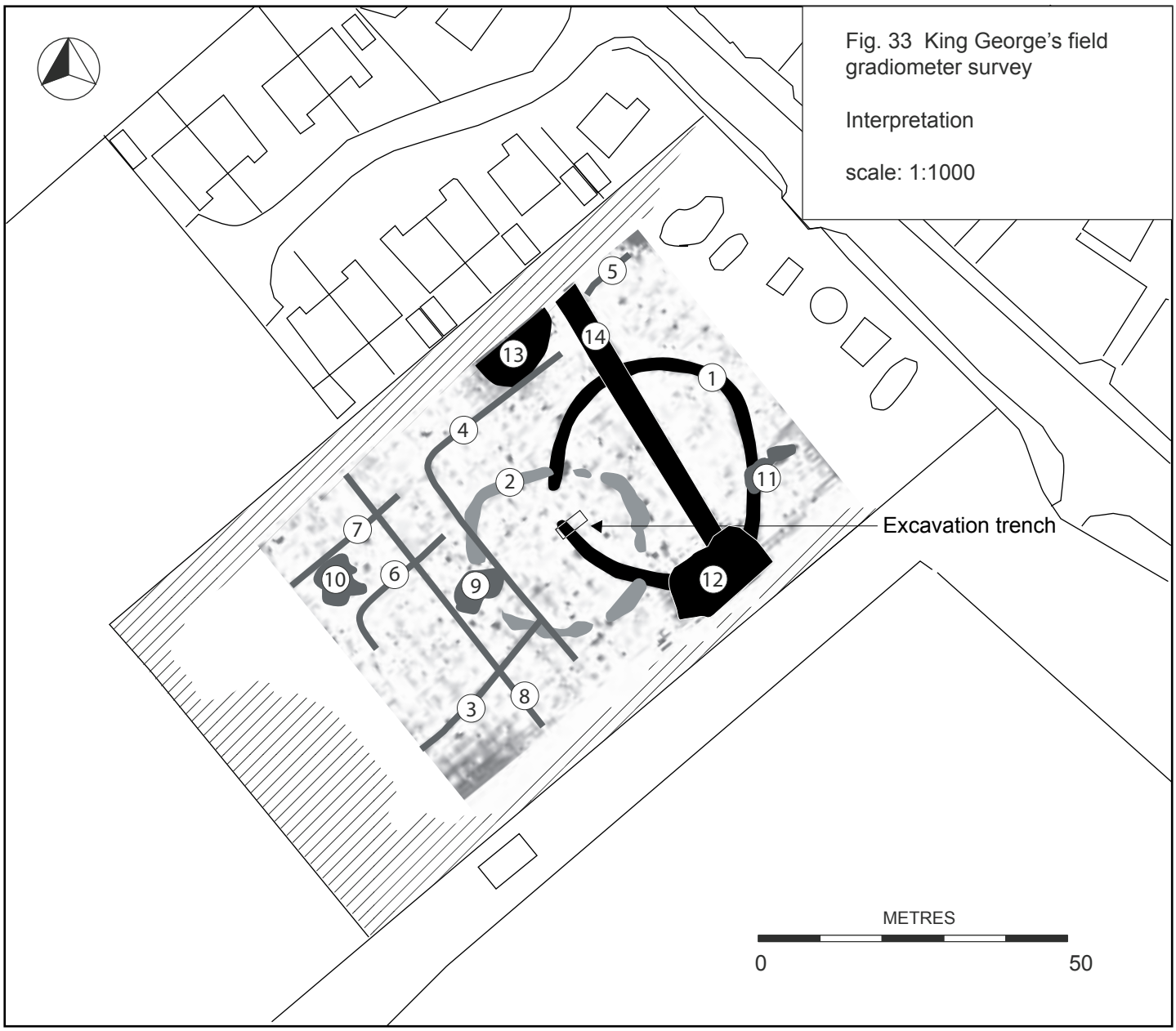
Fig. 33 King George's field gradiometer survey
Interpretation
scale: 1:1000
5
14
13
1
4
2
11
Excavation trench
7
10
6
9
12
3
8
METRES
0
50

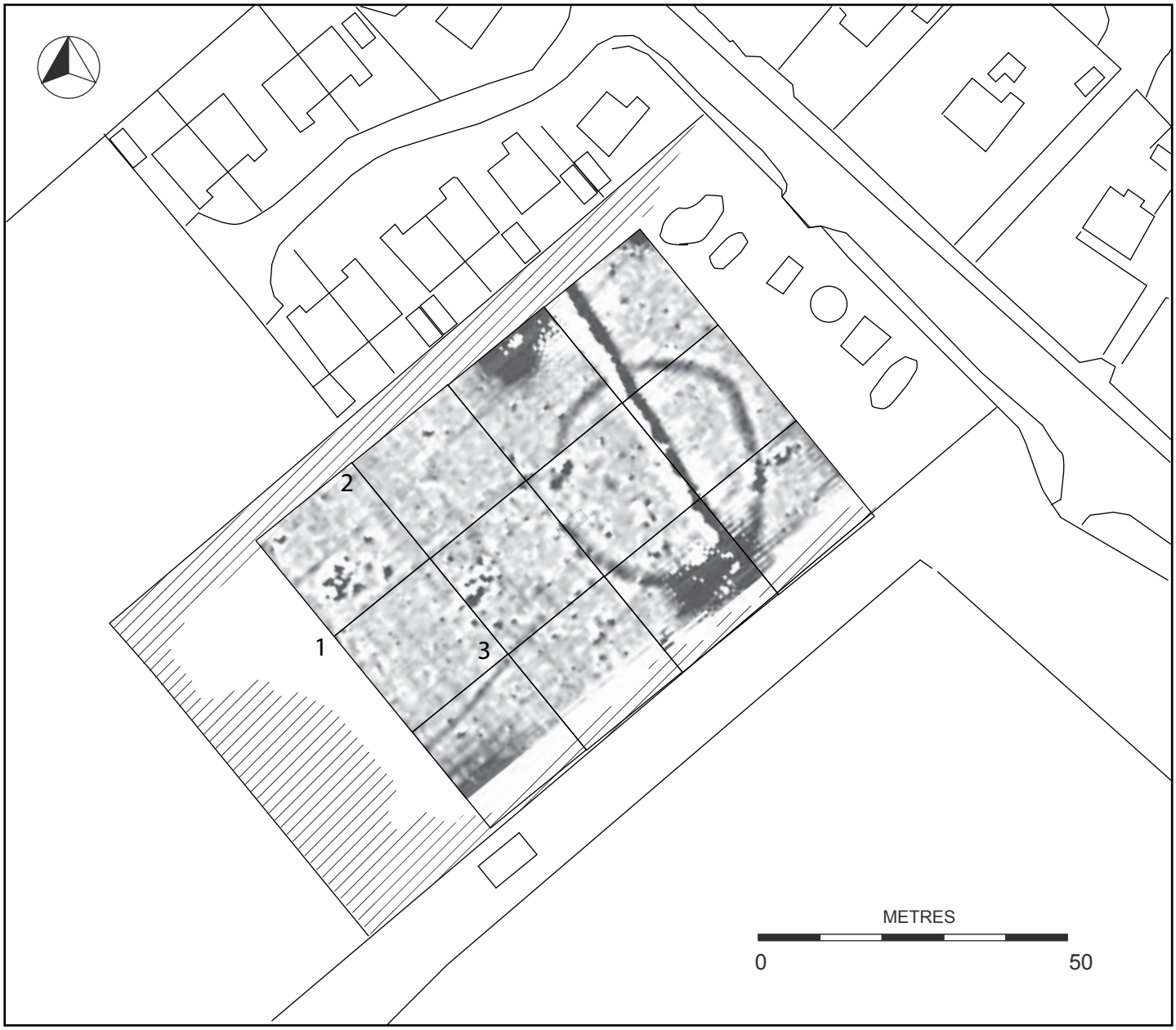

Fig. 34 King George's Field, Efailnewydd: Location of the soil test pits in relation to the geophysical survey

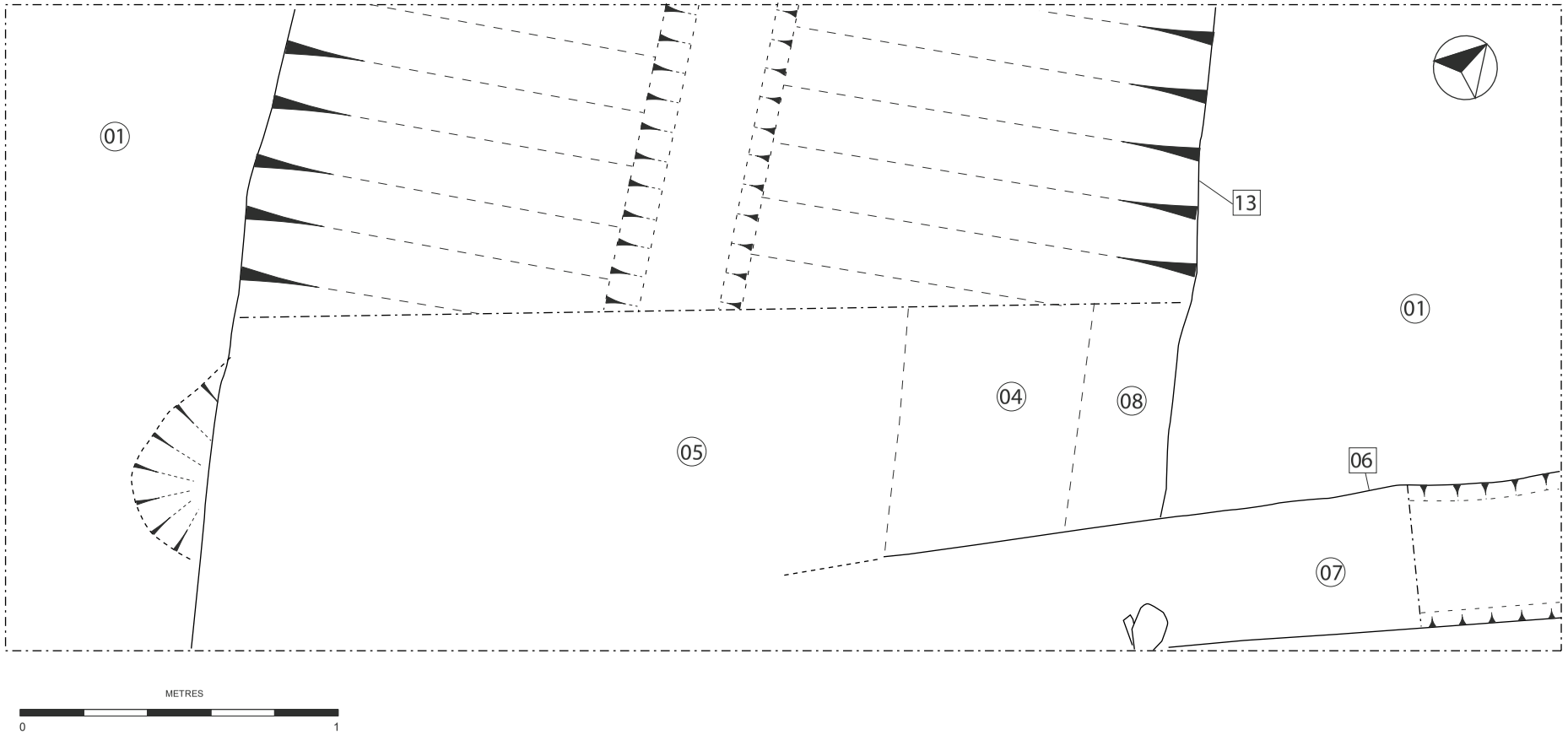

Fig. 35 Plan of excavation trench

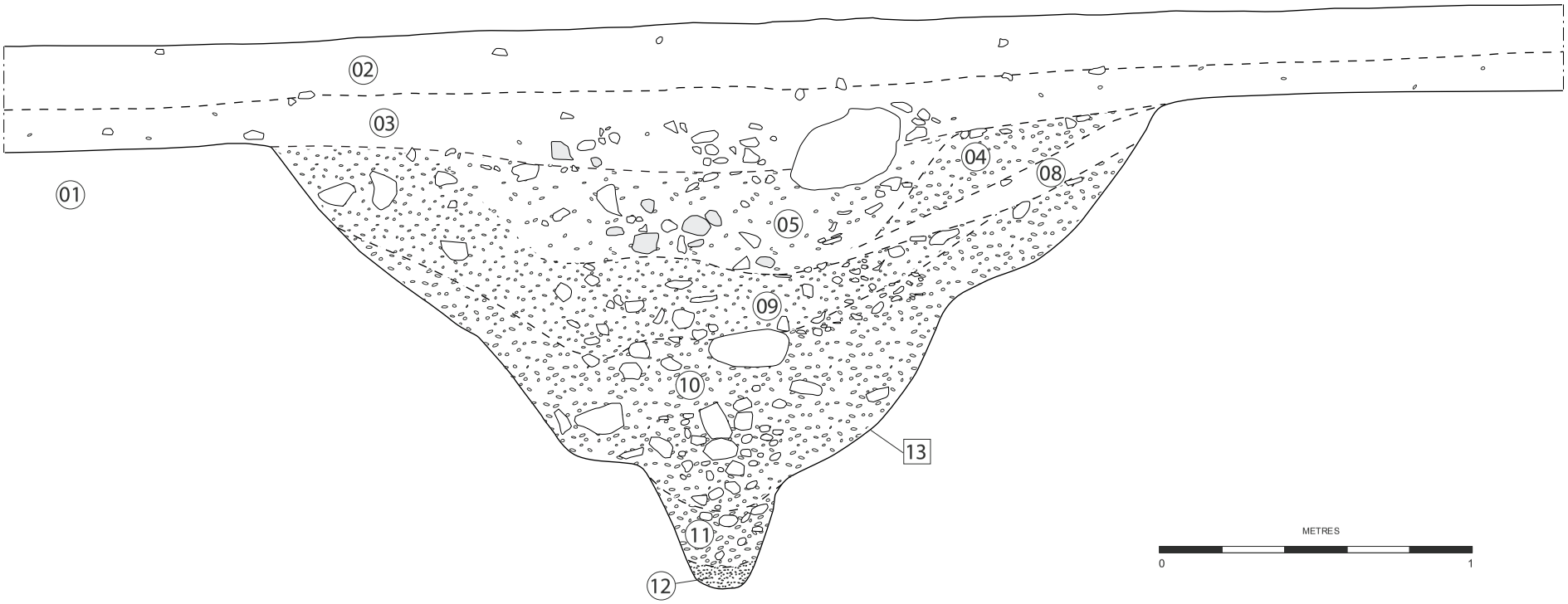

Fig. 36 South-east facing section through ditch

Plate 15 Ysgol Pentreuchaf School visit to King George's Field

Plate 16 King George's Field, enclosure ditch

Plate 17 Finds of flint and stone

Plate 18 Saddle quern fragments

5. ANALYSIS

5.1 The Survey Results and Assessment of Vulnerability

The use of aerial photography has been the prime mover in identification of these sites and the light soils of Llŷn are clearly productive for such photography and deserve continued targeting. Geophysics has proved a very successful follow-up on these soils whereas it has often produced poorer results on the boulder clays of Anglesey and the mainland. It has shown that there can be problems in interpreting aerial photographs where features are often overlaid by later field boundaries or cultivation or occasionally natural features. The results from the two survey techniques were generally complementary, the gradiometer detected ditches where parching had not occurred and the aerial photographs showed the line of the ditches where factors such as magnetic bedrock had obscured archaeological anomalies. In addition to the detection of cut features the gradiometer was able to detect the remains of plough damaged banks on some sites, along with features dependant on thermoremnant magnetic enhancement. Enhancement could be seen to occur within several of the enclosures, producing a general elevation in magnetic noise at Ynys Bach along with more discrete areas of enhancement at four of the sites that appear to indicate the presence of hearths and other debris on the floor levels of roundhouses.

The soil pitting has been very useful in identifying the exact nature of the subsoil as this helps with interpretation of variations in results or of individual anomalies in the geophysical survey. Such information is of more direct use than information on soils or geology that can be obtained from maps. It has also in some cases identified the presence of domestic activity associated with the enclosures, in the form of burnt stones and the presence of areas of dumped burnt stones seems to explain some geophysical results at Ynys Bach and , in the previous year at the hillfort of Meillionydd. The soil pitting has also identified the presence of a buried horizon at Ynys Bach, showing that the low earthwork has good potential for survival. With most sites, however, it has helped to confirm that they survive only as subsoil features. As a technique it is quite rapid but provides a lot of useful information to support the non-intrusive photographic and geophysical surveys. As a minor intrusion that is immediately restored it is acceptable to landowners.

The Llŷn Cropmarks Survey was fortunate in being able to follow-up to a further stage than the present survey, by carrying out trial excavation or even, in three cases, by area excavation. The latter produced important new evidence but the limited trial excavation on other sites was not very productive, doing no more than confirming the presence of features but not producing dating evidence. The trial excavation carried out in 2008 at King George's Field also failed to provide any dating evidence, but did show that the enclosure was domestic and had at least two phases of use. Slightly more extensive trial work would seem to be advisable if carried out in future with sample excavation of the interior as well as of the enclosure ditch.

The soil survey was initially designed to answer questions raised by the Llŷn Cropmarks Survey, which suggested that depth of topsoil was crucial to assessing vulnerability of buried remains. This was based on the idea that depth of soil would vary in a long-cultivated field because of colluvial movement. Thus an estimate of vulnerability could be made by considering slope, proximity to boundaries (where negative or positive lynchets might be produced), soil depth, land use and soil type. It was supposed that variations in soil depth would occur that either created erosion or protection. However, experience on the present survey, similar work done for the Funerary and Ritual Monument Survey and for the Parc Bryn Assessment (Bangor) shows that even in fields with s lope and with long use for arable that relatively little colluvial movement takes place. In other words the topsoil depth is fairly stable. The topsoil pitting has therefore not been very productive in terms of assessing vulnerability, although variations in depth of topsoil have been recorded. Clearly the great majority of fields in Llŷn are presently under permanent or occasionally re-seeded grass pasture. However, recent changes in world economy are favouring a return from stock to arable and this is already showing in the number of fields being ploughed in Gwynedd. Soil pitting shows that the ploughsoil horizon is normally of a very similar depth, around 30cm and most of the present enclosures have been reduced entirely to subsoil features and can be considered as stable, presuming arable practices remain the same. However, conversation with one farmer showed that he was thinking of returning a pasture field, containing a well-preserved slight earthwork site, to arable at some time and that his first action would be to deep

plough the field. Modern deep ploughs can cut to a depth of 60cm or more and the soft subsoils of Llŷn are completely vulnerable to such ploughing, which would remove all features but the main enclosure ditches. The survival of subsoil archaeology cannot therefore be taken for granted.

Future management of such sites must rely on some agreement about land use. Where sites survive as partial earthworks there is some survival of above ground layers and continuance of pasture is desirable and cultivation for any re-seeding done by rotavation rather than plough. Where sites survive only as completely levelled features they will remain stable under normal ploughing but avoidance of deep ploughing is essential. Such land-use requirements could be a part of any agricultural grant schemes.

Future aerial survey may not be accompanied by geophysical survey so crop marks need to be assessed in their own right, classified according to accepted site types and supported by desk-top study of location, topography and soils. Use of a variety of different techniques as for the present study provides more information on which estimates of site type, value and vulnerability can be made. Continued aerial survey is likely to identify more sites. For the present projects in 2006-7 and 2007-8 it was possible to select related groups of sites to create a themed project. However, other crop marks have been identified, for instance of probable Bronze Age burial features and of unenclosed settlement. These all need further assessment and so multi-period projects, as for the Llŷn Cropmarks Survey would be most productive in future.

5.2 Interpretation of the Cropmark Enclosures and Comparative Evidence

The eight sites surveyed all initially appeared, as cropmarks, as similar as quite small ditched enclosures of sub-circular plan, most in somewhat prominent settings. An identification as small, possibly defended enclosures of probable Iron Age date was about as much as could be said from the aerial views. The details revealed by the geophysical survey, together with further consideration of the soils and topographic setting allows some more interpretation, although still lacking in direct dating evidence. Comparative evidence with other known earthwork sites or excavated sites must therefore be used to suggest dating and better interpretation.

The enclosures do differ slightly in form although all are surprisingly similar in terms of area (Table 9) so whatever the variation in form, their function may have been quite similar, best described as enclosed homesteads.

Table 9 Internal area of enclosures

Bwlch y Ffordd Isa	0.13ha
Maesoglan	0.10ha
Cwmistir Uchaf	0.13ha
Penybryn	0.07ha
Pont Rhyd Hir	0.16ha
Cae Newydd Mynachdy	0.13ha
Ynys Bach	0.11ha
King George's Field	0.10ha

Evidence for comparison of the enclosures can use the elements of shape of the enclosure, apparent width of the ditch, size of the entrance and position of houses, if any. The enclosures also vary in the type of topographic setting. The soils have some relevance in that all were found to be on quite light, permeable soils and this was why they were located in the first place, because they were on land that was prone to parching. These light, easily cultivated soils however, may have been targeted by early farmers. It should be borne in mind though that this could be a biased sample, as similar enclosures in heavier soils would not have been revealed as crop marks.

Comparison of the characteristic elements of the enclosures suggests that all eight were enclosed settlements and not primarily defensive, although the ditches of six are sufficiently large that they might be called semi-defensive or 'substantially enclosed'. These are Bwlch y Ffordd Isa, Cwmistir Uchaf, Penybryn, Pont Rhyd Hir, Ynys Bach and King George's Field. Of these only Bwlch y Ffordd Isa and Cwmistir Uchaf are in prominent locations, the former on a river promontory, the latter on a slight ridge. Penybryn is on a hill slope and Pont Rhyd Hir, Ynys Bach and King George's Field are on

level lowland. The remaining two sites, Maesoglan and Cae Newydd Mynachdy are both on low locally prominent hillocks but both have quite slight ditches.

The eight enclosures can be divided into two groups: firstly possible second or early first millennium enclosures, secondly enclosures of broadly Iron Age type.

1. The first group comprises the enclosures at Maesoglan and Cae Newydd Mynachdy. These both have slight ditches and are somewhat irregular in plan, Maesoglan being oval. On comparative evidence it seems likely that these two fall into the class of 'concentric enclosure' typified by the mid-late Bronze Age settlement of Mellteyrn Uchaf, Llŷn (previously identified from a crop mark) and by the surviving earthwork, excavated Early Iron Age settlements of Moel y Gerddi and Erw Wen, Meirionnydd. Further afield are undated, but almost certainly pre-Roman Iron Age examples at Hafoty Wernlas, Caernarfon (which predates a rectilinear enclosure), Llwyn-du bach, Caernarfon and probably (in a re-used Neolithic enclosure) at Llandygai, Bangor. These latter are more likely to be of Early Iron Age date, while small second millennium enclosures such as Mellteyrn Uchaf are unlikely to be found except as crop marks, such as those in the present survey. Maesoglan has a very slight ditch and possibly another outer concentric ditch and this makes it seem more likely to be a Mellteyrn Uchaf enclosure. Cae Newydd Mynachdy has a single ditch with one central roundhouse and this makes it comparable to the settlements of Moel y Gerddi and Erw Wen.

2. The second group comprises enclosures with more substantial ditches and of three slightly different types of settlement:
a. Compact sub-circular enclosures with houses detached from the enclosure walls, but not set specifically central to the enclosure.
b. Enclosures of sub-rectilinear plan.
c. Enclosures of compact form with the house walls coeval with the enclosure bank.

2a. This type includes Bwlch y Ffordd Isa, Cwmistir Uchaf, Penybryn and King George's Field. These enclosures are distinctively neatly laid out, close to a circle. Penybryn however, is of a slightly oblate shape, which seems deliberate, while King George's Field is flattened at the 'rear', that is the part of the circle opposite the entrance. Only Bwlch y Ffordd Isa and Penybryn have identified houses. Bwlch y Ffordd Isa, Cwmistir Uchaf, Penybryn and King George's Field have identified entrances and these are quite wide. These are typical Iron Age small settlements, which can be curvilinear or rectilinear in plan, the choice of design seemingly not culturally significant. They can be compared to the excavated (sub-rectangular) settlement of Bryn Eryr, Anglesey, occupied from about the third centuries BC and into the Roman period. The possible antennae ditches at Bwlch y Ffordd Isa and Penybryn both seem likely to be late additions, not part of the main design, and rather different from the more substantial antennae seen at the Iron Age settlements of Dan y Coed and Woodside, Pembrokeshire (Williams and Mytum 1998) but performing the same function.

2b. This type comprises only the enclosure of Pont Rhyd Hir. This is of distinctive shape with one half close to the arc of a circle and the other half close to one side of a rectangle. It lies only a few hundred metres from the sub-circular enclosure of King George's Field and they both lie on quite level lowland. The odd shape of the Pont Rhyd Hir enclosure is probably misleading and it is just an odd hybrid of the same curvilinear/rectilinear enclosures of the first type. It is also possible that it began as a lightly ditched curvilinear enclosure and was modified with its rectangular end, even though no sign of an earlier curvilinear ditch shows on the survey. There may be some significance in the fact that the King George's Field enclosure also has a slightly flattened back segment. This style must have some specific origin, as yet undeciphered, perhaps simply an easier way to complete the rear of the enclosure while the front was kept as a traditional curve. The same feature was present at the larger settlement enclosure of Gussage All Saints, Dorset, where the rear flattened section of enclosure was very distinct and deliberately designed.

2c. This type of enclosure is represented only by that of Ynys Bach which can be characterised by the fact that it has a substantial bank and the main house that can be seen from the survey appears to have its wall built into the bank. This type of enclosure consisted of a series of adjoining or conjoined houses or rooms around a yard set within a small enclosure. There are about 50 of these in the north-west and they are very similar in style to those known as 'courtyard' houses of the Romano-British period in Cornwall. Those in north-west Wales are also likely to be developments in the Roman period but it has been shown that in some cases they were constructed over earlier timber roundhouses (Kelly 1988,

145-7) and in one case, near Harlech (Meirionnydd) clearly developed from an earlier concentric type settlement enclosure (Fig. 18). They vary in size from those with a single house to those with several, but rarely more than three of four. Some are of curvilinear outline and some are of rectangular or even polygonal outline. Those known are mainly well-preserved walled examples in the fringes of the upland in the mainland, so the identification of one in the lowland of Anglesey is interesting.

The Llŷn Cropmarks Survey (Ward and Smith 2001) identified seven sub-circular enclosures that can be interpreted as small settlements. Four of these were of the 'concentric circle' type of which one was a small hillfort of Castell Odo type and one appeared to be a small sub-circular enclosure superimposed on an earlier concentric enclosure. This and the other three sub-circular enclosures were all closely similar to those in our group 2a. The present survey enclosures had internal areas of 0.07, 0.1, 0.13 and 0.13ha, while the Llŷn Cropmarks enclosures had areas of 0.07, 0.07, 0.1 and 0.2ha. Two of the Llŷn Cropmarks enclosures lay on slight local knolls, one of them, Pwll Parc, only 2km to the east of the Cwmistir Uchaf enclosure. Another lay on an inland promontory, like Bwlch y Ffordd Isa and one lay on a hill slope, like Penybryn. All four overlooked or were close to small river valleys and the same was the case for the present survey. This similar topographic situation suggests that detailed topographic study could identify the likely position of other such enclosures. Such geographic determinism argues for more intensive survey such as of one particular geographic unit such as the valley of the Afon Soch. This would allow a truer picture to be built up of the extent of prehistoric land use. The present studies have extended knowledge about settlement in the lowland in a random way as occasional features become visible, but it is difficult to translate this into a whole picture. The total landscape approach of the RCAHMW Upland Survey needs to be applied to the lowlands where agriculture and settlement has always been focussed.

Taken together the Llŷn Cropmarks Survey and the present survey show the presence of a well-settled lowland landscape of small homesteads, of which those known is still probably only a small part. These sub-circular enclosures can now be seen as characterising the lowland here with few comparable examples amongst the better preserved areas of settlement in the uplands of northern Llŷn or the mainland further east. The previously known circular or concentric enclosures represent only a very small element of the whole of known roundhouse settlement with only 37 recorded examples out of over a thousand examples of settlement. These circular or concentric settlements are those of our group 1 and believed to all be early sites of which the few found may merely show that there was much less settlement during the second and early first millennia BC. The main bulk of recorded enclosed or nucleated settlements of about 400 sites does include 105 of curvilinear outline but these are characteristically ovoid walled enclosures, not of obviously circular outline.

The lack of lowland settlements in Llŷn of rectangular plan, like Bryn Eryr, Anglesey is notable and perhaps could represent a cultural difference. The dominance of sub-circular forms of enclosure fits in with a generally Atlantic sea-board pattern with similarities seen in Carmarthenshire, Pembrokeshire and Cornwall. The lowland landscape now seen in Llŷn is closely similar to that identified in the lowland of north-east Wales (Manley 1991). There, a survey of cropmarks and earthworks identified at least 60 small undated enclosures, mainly in non-defensive positions and mainly of sub-circular outline, with a few rectilinear. These varied from 0.1 to 1.2ha in area, most frequently between 0.2 to 0.3ha and so closely comparable to the Llŷn sites. The small enclosures in north-east Wales still have to be investigated but were taken to represent the previously missing lowland Iron Age farming landscape to complement that of the known hill forts. The same kind of landscape is gradually being revealed in Llŷn where the picture so far has been skewed by the good preservation of sites in the upland margins.

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